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The Photogram.

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" A new epoch in the history of human progress dates from the
time when HE who

Never but in uncreated light
Dwelt from Eternity,

took a pencil of fire from the ' angel standing in the sun,' and placed
it in the hands of a mortal."—OLIVER WENDELL HOLMES.

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Index.

Abbreviations used in this Index.

C. = "Correspondence." C.T. = "Current Topics." E.C. = "Editorial Chat." Ed. = "Editorial Article." I. = "Ideas." N. = "Novelties." O. = "Obituary." P. = "Prints." S. = "Shop." T. = "Trade." Th. = "Theory & Practice."

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THE PHOTOGRAM

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No. 25.

Copyright.—This Magazine, as a whole, with its contents, both literary and pictorial, is copyright; and the copyright is registered. Our contemporaries are very welcome to quote from our pages (with acknowledgment), but we propose to protect ourselves and our advertisers against piracy.



Copyright.

ALTHOUGH the Photographic Copyright Union has done magnificent work for the craft, we are disappointed that its general public meeting passed off without a word as to needful copyright legislation. That the present copyright law is a chaotic, half-workable machine is generally admitted. That authors and reproducers must force a re-consideration before long is certain. The Dellagana case led to the formation of a reproducers' association, and a similar critical question may, at any moment, lead to an active agitation that must end in the passing of new laws. That certain sections of the public, and especially the editors of illustrated papers, feel they have a grievance against photographers, is evidenced by the recent bitter correspondence in *The Times*. Add to all this the fact that we have now a government pledged to constructive, non-contentious legislation, and we see much reason to anticipate that copyright will soon become a burning question, and to regret that no intimation was given as to the views of the Union upon the subject.

We know that there are certain photographers who wish to "keep quiet on the copyright question, because, if the matter comes before the public and parliament, *we* shall come off much worse than we are now." We do not for a moment believe that the Copyright Union would shirk the consideration of copyright law because of a fear lest the public should claim justice when the artist and photographer are claiming the same. But the very fact that the interests of sitters and photographers *do* clash at certain points, makes it the more imperative that the photographer's side of the question should be very carefully considered by the photographer's representatives if any united action is to be taken when the time for action arrives.

It must not be forgotten that even amongst photographers there are diverse interests, and that what is desirable in a copyright act, even from the point of view of our own craft, cannot be settled by the mere dictum of a committee, however influential or representative. To obtain our rights we must speak with one voice. To secure this unanimity we must consider and discuss the various knotty points involved. We would impress upon the Council of the Union, and upon their thousand or more members, the importance of the question; and strongly urge them to formulate a policy and to prepare an organisation whereby the whole strength of the craft can be quickly and effectively used in support of such policy.

“At Home” Portraiture.

IN a recent number of the *Photo-Gazette* of Paris, appears an article illustrated by C. Puyo, on portraiture in an ordinary room. Many of our readers would gladly attempt studies of this kind, doubtless, if they could feel with the writer that a regular studio was not necessary. An ordinary room is to be used, one lighted either by a bay, or, better, by two windows with as much sky illumination as possible. With relation to the respective merits of studio and ordinary room, he says, “It is plain that the studio will always have the advantage of being better lighted, and therefore it will always allow one to catch certain quickly changing attitudes and movements. But, in a well-lighted room during half of the year and with the lenses every amateur possesses, a length of exposure of from three to eight seconds ought to suffice. This length of exposure should permit of the ordinary attitudes of the body, and the most varied expressions of the face, to be represented. The question of illumination disposed of, it is possible in a room to vary the direction of the light, to regulate the diffusion of the lighting, or modify its difficulties as easily as in a studio and within practically the same limits.” He further says, “The direction of the light, like every line in space, can be defined by the two angles it makes respectively: 1st, with the horizontal plane; 2nd, with a fixed vertical plane. Let us take the vertical

plane, containing the profile of the model's figure placed standing. In a studio furnished with a high sky-light the angle of the light with the horizontal plane—or inclination—can vary from nothing to 90° . In a room it would extend only 50° or 60° if the ceiling is high. It is then in the studio only that it will be possible to obtain certain particular effects due to vertical lighting, but these effects are necessarily in very limited use; in practice the normal lighting under which we are accustomed to see figures and which it is generally agreed upon to use in the particular case of a portrait under pain of injuring the resemblance, is kept at an inclination of about 45° . One is obliged also in the majority of cases to reduce very greatly the upper lighting of the studio, and to actually bring it down to a degree of intensity comparable to that naturally given by the diffused light from the white ceiling of a room.

2nd—We shall have then in a room an inclination of light very convenient for ordinary use, and a sufficiently reduced vertical lighting. It remains to note the variations of the second angle, that which is made by the direction of the light with the vertical plane passing through the profile of the figure. When this angle is nothing, or very small, the figure is lighted full face with little difficulty; in increasing the angle from 0° to 90° , an oblique lighting is obtained, which is the



“AT HOME” PORTRAITURE.

BY C. PUYO.



"AT HOME" PORTRAITURE.

BY C. PUYO.

lighting called normal, and from this point difficulties increase. Beyond 90° and going from that to 180° one obtains successively correct lighting, then false lighting.

In the studio all these changes are made by a simple use of curtains combined with slight changes in the model's position; in a room it will be equally possible, we are going to show, to vary the angle, so that it can change from 0° to 180° , the arrangement of curtains will be much more simple, but on the other hand, the model's changes of position should be according to a systematic plan.

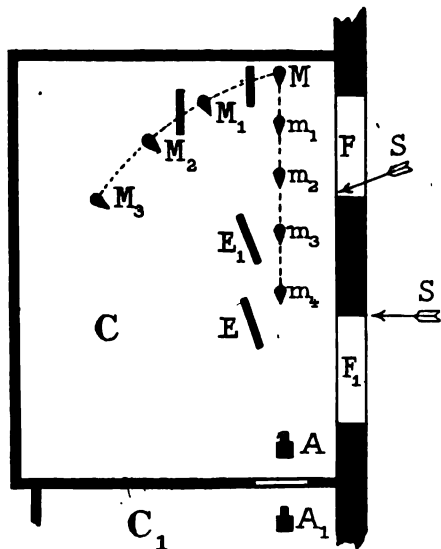
Referring then to the diagram, let there be a room C lighted by two windows F and F_1 . Suppose the instrument at A, or if it can be placed further back, at A_1 , in an adjoining room C_1 , communicating by a door with the first one. A large white screen is arranged as a reflector, moved by a frame on feet. Besides, each window is fitted with three curtains slipping on rings, a curtain of white or blue muslin, one of a medium toned deep yellow or red, sufficiently transparent; and, last, an opaque curtain which allows of regulating the amount of window opening.

This done, the first position of the model being at M, facing the instrument, let us change his

three sources of the light, window F, window F_1 , and screen, gives a very flat lighting of the face. In conclusion, we obtain by moving the model from M to M_3 , a normal lighting with lessening difficulties.

We now move the model parallel with the windows at m_1, m_2, m_3, m_4 , altering at the same time the curtains and screen, and consider the theoretical angle defined above, which the light makes with the vertical plane looked at in profile. It is easily seen that moving the model to m_1, m_2, m_3 , is equivalent to increasing the angle in question, which from 45° —value corresponding to the position M—tends towards 180° . It can then be understood that by such change of position, combined with shifting the curtains and screen, the most varied lightings may be obtained. It would take too long and be almost impossible to analyse them all and clearly express their infinite gradations. We can only invite the reader to find them out by personal trials.

Let us now consider the moment when the model in its movement towards m_4 passes the window F and is in the middle of the space that separates the two windows, between m_3 and m_4 . In this situation it is lighted behind obliquely by the window F, in front by F_1 , and by the reflection



position, making only two changes, for simplicity's sake. 1st, a movement parallel with the plane of the two windows; 2nd, a rotating movement around the centre of the window F, near the instrument. Placed at M, the model is strongly lighted on the left by the window F in front, feebly by the window F_1 on the right, by the reflection from the screen. It is the normal lighting, the two angles just described being both about 45° . Let us move the model around F_1 on the arc $M_1 M_2 M_3$; the intensity of the light proceeding from F diminishes, the action from F_1 increases, the lighting of the two halves of the figure tend to become uniform, the difficulties lessen. In M_3 the combination of the



"AT HOME" PORTRAITURE.

By C. Puyo.

of the screen. In causing the light from F to predominate and properly placing the model, a series of effects can be produced from a correct to a false lighting. It is necessary to note here the important part played by the screen; in false lighting effects the greatest part of the face is in shadow, the small quantity of illumination which lights the face uniformly extended, effaces all relief. Then, by means of reflections coming from the screen one can, by soft gradations, light up the portions lost in the half obscurity. Generally speaking, the use of reflections in lighting figures can cause very special and harmonious effects, particularly when the reflected light can be made more prominent than the direct light; the lighting thus produced has a peculiarly striking effect; the particular impression it creates is doubtless caused in part by the direction of the reflected light which strikes the figure horizontally, or even from below, upwards.

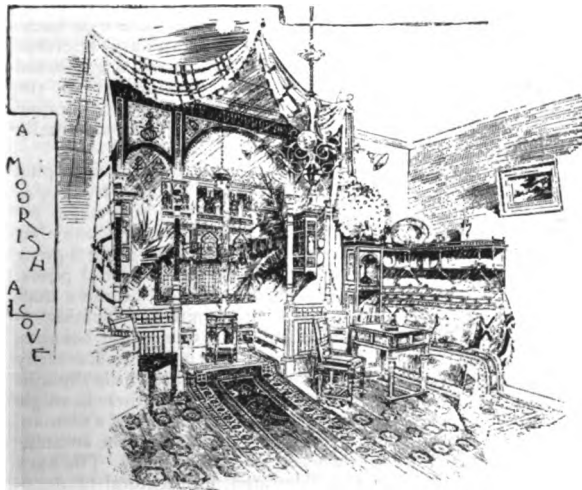
If then your room is so placed that at certain hours the sun enters it, do not consider its rays as troublesome, make use of them to increase the power of your reflections. Do they come in the direction of the arrow S, perpendicularly to the

windows, close the window F, place the model at m₄ outside the lighted space, throw a white sheet at the model's feet, incline the screen placed at E, so as to diffuse and reflect from below, upwards, the rays of light, and you will have a lighting *à la Chéret* and will endow your model with a turn-up nose. Does the sun strike obliquely on the wall following the arrow S₁? Place the model at m₃, always outside the lighted space, the window F open, the screen at E₁ reflecting the diffused rays on the face, you will have the following lighting: the contour of the figure in a circle of illumination from the window F, the face strongly lighted by reflections, and the whole harmoniously subdued by the diffused light of the room."

The illustrations for this article were from negatives by M. C. Puyo, one of the strongest exhibitors in this year's Salon, and the exposures were made in a room similar to that shown in the diagram. Any amateur interested in this branch of camera work will, we feel, be inspired to new efforts by the results attained by Mr. Puyo, and encouraged by the clear directions given in this article, which is simply signed, "A. T."

Artistic Fitments.

FROM every point of view artistic surroundings are so important to everyone engaged in portraiture, that it is unnecessary to urge their importance. Even to abuse the old, and ugly, and conventional backgrounds and accessories of the professional studio a few years ago, is like flogging a dead horse, for the photographers themselves have revolted against them.



STUDY FOR AN ATELIER.

There is still much to be done, however, by both professional and amateur portrait maker, to make their studios or homes as perfect as they should be.

"At home" pictures, and especially those of artists or literary men in their own rooms, owe so much to the naturalness of the furniture, books, etc., that it is worth considering whether more of this naturalness cannot be introduced into studio work. And as the making of portraits in ordinary rooms is a comparatively simple matter since the recent advances in plate-rapidity, every amateur who may at any time turn his attention to figure studies, might well consider the picture-making point of view when furnishing or decorating any of his rooms, or when altering the furniture and decorations.

In studio working there has been a steady evolution from the old studio with only one position for the sitter, for the camera, and for the light, through the long, narrow studios in which only the ends—or one end—can be used, to the large roomy studio with light on both sides, and width enough to allow of the camera and sitter occupying any position that may be wished. We are on the eve of another step forward, to the establishment in which every room shall be a studio—not for regular use, but for occasional work with "costume" subjects, and whenever the photographer wants a picture with something better than the conventional background. The glass-house has been a good friend to the professional photographer. It has given him scope and ample control of his lighting; but, like many another good friend, it has become in too many cases a tyrant, and has

tended to reduce the bulk of professional work to a dead level. There are plentiful signs that this is coming to an end, and during the past few years numbers of professionals have been shaking off the fetters of convention, and trying to induce the public to take something better than the style of thing they have hitherto demanded. The increased sensitiveness of plates at "ordinary" prices, and still more, the attention drawn to the question of sensitiveness, has increased the practice of photography in ordinary rooms. The introduction of more or less portable electric light systems for

and in these rambling suggestions both points will be considered.

Of all the bald and inartistic portions of a studio, the baldest and most inartistic is usually the background and stand. It is needless to say that the end wall of the studio should be a background in itself, either plain or graduated distemper, or covered with a small-patterned Lincrusta-Walton or similar embossed covering, painted a good neutral tint. The backgrounds should be on a stand, so that they can be moved to any part of the studio.

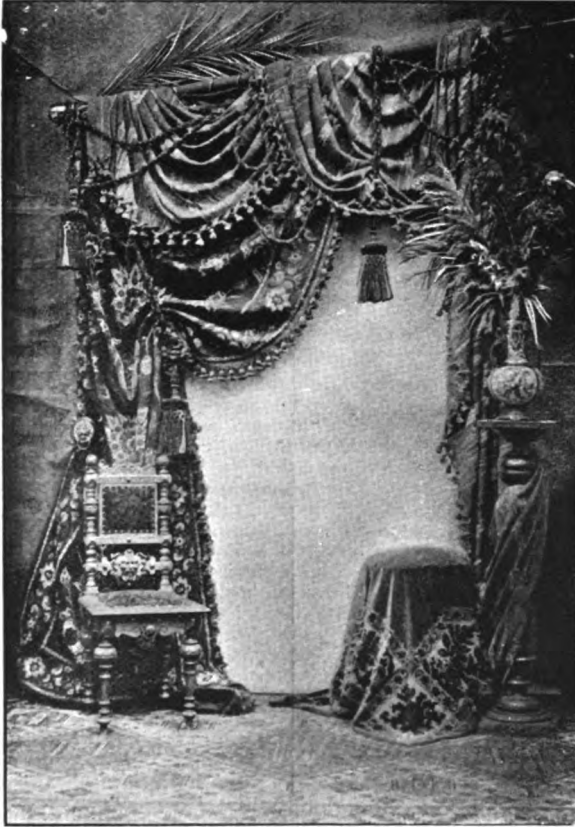
There is no reason why the stand should not be artistically draped, and the accompanying illustration of a draped background, in use in one of the German studios, is useful as a suggestion, though the drapery is perhaps too heavy for the general taste. In this, as in everything else, a little thought will pay for itself, and the curtains for draping the stand should be chosen with a view to their use as plain backgrounds of various tints. This use must also be considered when attaching them to the stand and arranging the looping. They must be so placed that they can be quickly and easily let down to hang straight. An excellent quality of material for this purpose is known as "plushette."

For each curtain, to give ample size for looping up, four yards are necessary, and this, in 52 inch width, costs from 1/9 to 2/- a yard at an ordinary retail outfitter's. There are many good, cheap fabrics that come in at much lower prices, but plushette gives a fairly rich appearance, is wonderfully strong and durable, and rarely requires washing. In many a room where a background on an ordinary stretcher would be an eye-sore, a graduated ground can be attached to the wall, and plain grounds draped about it in such a way as to actually ornament the place.

A "Study for an atelier," copied from *Wilson's Photographic Magazine*, is a charming suggestion for an attractive room; and one that would offer surroundings for a great number of easy and natural poses.

It is not intended to be more than a suggestion, capable of infinite modification to suit various conditions. It is one of the beauties of this kind of decoration that it is not necessarily expensive. More can be done with a little thought than with a good deal of money, and there is ample scope for the taste and dainty fingers of a woman, as well as for the industry and skill of the amateur carpenter, fret-worker, and wood-turner. The back numbers of the illustrated architectural or decorators' papers, which can be seen in the free libraries, contain a wealth of suggestions. Ideas can also be obtained from the catalogues of good upholstery firms, who would supply fittings.

(To be continued.)



portraiture has tended in the same direction, and the artificial light gives a wonderful extra power, as may be seen from an example in the October, 1894, issue of this magazine, page 245, where a portrait was made in a stairway in which it would have been impossible by daylight.

It certainly seems as if more attention can well be given to the furnishing and decoration of studios and the other rooms of the photographer's establishment, with a view to the furniture and decorations acting as accessories and backgrounds. It is also possible in many studios to do much in the way of pure decoration, for the sake of rendering the place more attractive in general appearance;

A Chat about Child Models.

By CARINE CADBY.

Illustrated by Will A. Cadby.

HAPPY is the independent man who can carry out his ideas without the help of another. Happy too, in a measure, is the photographer whose study is nature; who, when the spirit so moves him, can wander off with his camera and wait for happy effects.

But, alas! for the unlucky mortal who is at the mercy of the model, and if it be the child model, then indeed is he worthy of our commiseration.



His ideas must be stoppered up till this necessity has been found and secured, and from that time his difficulties only begin.

For those who live in the country, a professional child model is rather out of the question, consequently an unprofessional one must be hunted for.

I use the words "hunted for" advisedly, having experienced the difficulty of finding a moderately good-looking, well-shaped girl. Philanthropic people offer them wholesale for the sake of the country change, but, after a little experience and a few interviews, one finds that those chosen for inspection are more for their needing a fortnight in the country than from their pictorial appearance. The occasion, too, is against them, as everyone knows the effect of best clothes, shiny faces, and crimped hair on little London children. One is, in the end, reduced to stalking the streets for them—by no means a pleasant last resource.

If the reader will allow me to digress, I will tell him one of my experiences in this last-mentioned sport.

I saw a picturesque little girl standing at a street corner talking to a friend. In spite of having a bundle of wood under each arm, her attitude was not ungraceful. I chatted to her a little, and eventually asked her to take me home. We mounted five flights of stairs to her door, where her mother, rather a formidable Irish lady, gave me an interview, assisted by all the neighbours in the adjoining flats. Her antagonism and suspicion of School

Board inspection at last giving way, it was agreed the child should come to us for a fortnight. So she gained a holiday and we a model.

One naturally gains greater experience by using many different models, but this requires an immense amount of energy and patience. A child does not naturally sit still after the first novelty of sitting has worn off—it finds the work slow and tiring. Another thing is, although children enjoy being dressed up, they are not so delighted with the other alternative, being bereft of garments; so that by the time both these difficulties have been overcome, the temptation to go on using the same model is strong.

A great help is a child who is naturally gracious and vivacious, and will of her own accord fall into pretty attitudes. But this, too, has serious drawbacks, as for a lively disposition it is hard to keep still, and taking snapshots and enlarging afterwards is almost the only satisfactory method.

A slightly stolid child has the advantage of keeping the same attitude longer, but a happy medium is the most desirable.

The following may perhaps illustrate some of the difficulties the photographer has to encounter.

"Now stroke the kitten as if you were very, very fond of it," he says to the vivacious one.

"But I'm not; she scratches," is the answer, and a charming attitude of repugnance follows it.

"All right! Keep like that!" he shouts, trying hurriedly to focus. Long before her figure is sharp he hears—"Dear little pussy! mustn't scratch," and the fickle little imp is in a still prettier attitude, fondling the equally annoying



cat. Job-like he tries for that effect, but a yell stops him; "dear little pussy" has claws!

One tries all kinds of methods with children; taking them into one's confidence and leaving them outside. Sometimes telling them a story has kept them interested and unconscious, but for that there must be a third person, as the poor operator has enough to worry him.

This reminds me of a photographer who wished to photograph a child in real tears.

A heartrending tale was read to the little sitter, while her favourite doll was perched on the camera, at which she was bidden to look, to secure a good view of her face.

The story failed, no tears came, and the photographer was annoyed at the waste of time. However, in moving the camera impatiently, the

doll fell and broke, which resulted in tears enough for a dozen photographs.

The beneficial effects that the photographing of children has upon the operator I need hardly dwell upon, for everyone with photographic experience must recognise that his stock of patience and long-suffering must increase, for does he not force himself to coax when every natural impulse urges him to scold; and how often, alas! does he not hide a wrathful "soul behind a smile?"

Society Life. IV.—The Camera Club.

THE Camera Club owes its birth to a correspondence in the columns of *The Amateur Photographer*. A writer suggested the formation of a club for amateur photographers, comprising a couple of good rooms, and a paid secretary to look after it. His idea was to have the rooms readily accessible from noon to 9 or 10 p.m.

This letter led to further correspondence on the subject, and in May a meeting was held, and it was decided to form such a club.

In June a circular was issued to amateurs, with such good effect that by the beginning of July many applications for membership were received.

At the first general meeting held in September, the funds amounted to £415. Captain Abney was first president, the hon. secretary being A. R. Dresser, and the name of the "Camera Club" was adopted unanimously.

Within a week of the first general meeting the club was established in rooms of its own, on the first floor of 21 Bedford Street, Strand.

After the rooms had been suitably fitted and decorated, the club was formally opened on the evening of November 14, 1885, by a *conversazione*, under the presidency of Captain Abney.

The club was registered as a limited liability company, on February 3, 1886, with a capital of £2,000 in £1 shares.

On February 16, George Davison was appointed assistant hon. secretary, and one of the chief changes he inaugurated was the substitution of regular papers or demonstrations on Thursday evenings, in place of "Informal Gossips."

In February, 1887, the first Conference of Photographers, accompanied by an exhibition of apparatus, was held in the Hall of the Society of Arts, under the auspices of the club. It was presided over by Capt. Abney (the president of the club), who has occupied the chair at the annual conferences, which have been regularly held, ever since. At this first conference, papers were read by the president, the late W. Adcock, Professor W. K. Burton, and Traill Taylor, H. H. O'Farrell, W. H. Hyslop, and Andrew Pringle, all members of the club.

In the first four months of 1888, a series of elementary lectures were given by Mr. Lionel Clark, which were well attended and much appreciated, and in April of that year a meeting of representatives from the chief London and provincial societies and clubs, was held at the club, with the object of discussing regulations for

photographic exhibitions, and a series of resolutions were passed which have since been very generally carried into effect for exhibitions throughout the country.

In the autumn of 1888, the first of many "One Man" Exhibitions was opened at the club, consisting of photographs by F. M. Sutcliffe, and exhibitions followed of works by Harry Tolley, H. P. Robinson, and Rejlander, Mrs. Cameron, Liddell Sawyer, Ralph Robinson, and J. P. Gibson.

The old club premises in Bedford Street having become quite insufficient to accommodate the members, who had of late largely increased in numbers, the committee cast about for new quarters, and at last arranged for premises being erected expressly for their use in the newly-made Charing Cross Road. The plans for this building were prepared by Col. Gale, in conjunction with Mr. Pilkington, the freeholder's architect.

The club will always be greatly indebted to Col. Gale for the great care and trouble he took to render the building in every way fitted for the special requirements of the club. Unfortunately, after the plans had been finally settled, questions of light and air were raised by neighbouring owners, which compelled alterations that considerably restricted the space which would otherwise have been available.

In December, 1890, the club moved into its present house, which, however, was not fully completed for several months afterwards, and it was not until May, 1891, that the club was able to hold its house warming in the shape of a *conversazione*. This was in every way a success, the club rooms being filled with a brilliant and much interested throng, of whom ladies formed a large proportion.

In the autumn of that year, a further series of elementary lectures was given by Lionel Clark, G. L. Addenbrooke, and others.

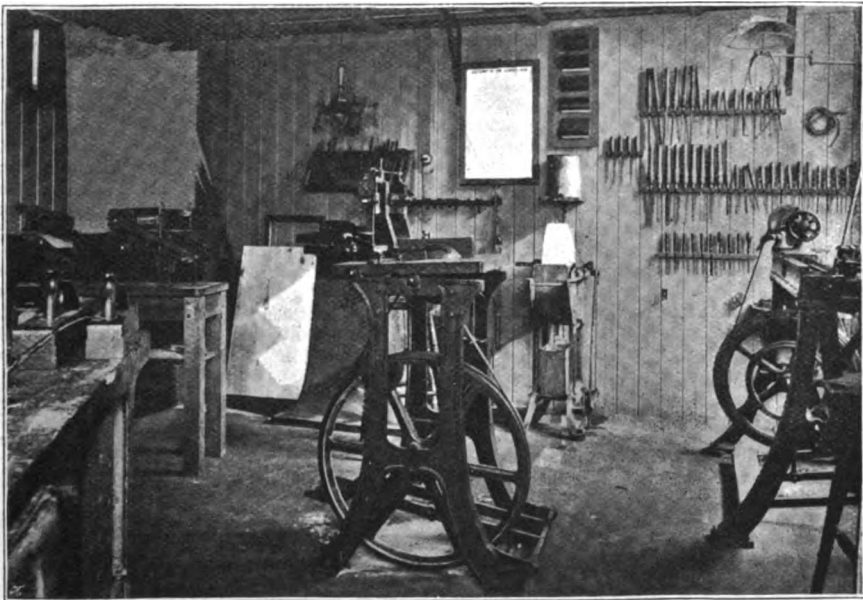
Every Thursday evening, from October to May inclusive, lectures and demonstrations are given; and on each Monday there are also elementary and other lectures and lantern demonstrations.

During the present season, the experiment is being tried of giving an additional Wednesday evening lecture and demonstration on some photographic process or invention.

The social side of the club is also attended to by, among other things, providing a monthly smoking concert, so that probably in no other club or society in the world are there a greater number of attractive and interesting evenings during the autumn and winter months.



THE SMOKING ROOM.



THE LATHE ROOM.

THE CAMERA CLUB.

Preparation of Platinum Paper.

By "E. A. R."

ONE of the most important points in connection with the platinum process is choosing a suitable paper. Many papers used for photographic processes are tinted with ultramarine. As this turns yellow on the application of hydrochloric acid in fixing the print, such paper cannot be used, as the whites and high lights will be degraded in the finished print.

Another point, the paper should have a good surface, and not too rough. The paper recommended is Rives' No. 74, 10 kilos. per ream, at 58/-; but other papers fulfilling above conditions may be used.

The paper has been sized to a certain extent in the manufacture, but not enough to prevent the image from sinking into the paper on drying, and giving a flat print, therefore the paper is floated on a sizing bath, of which the following is a formula:—

Arrowroot	500 grs.
Nelson's gelatine	180 "
Alum	110 "
Water	120 ozs.

The gelatine is allowed to swell in a small quantity of water; the water is then heated in an enamelled iron saucepan, taking care that no iron is exposed through the enamel, to a moderate temperature—about 80° F. The arrowroot is mixed with cold water to a thin cream, and stirred in; the gelatine is then dissolved by heat and added, then the alum, dissolved in a small quantity of water, well stirring all the time. The solution is allowed to remain just below boiling point for ten minutes, stirring frequently, keeping well below the boiling point, for should the size burn the results are impaired, the size being partly destroyed.

The paper is floated upon this for three minutes, care being taken that no air bubbles are under paper, and no dust on surface of liquid, which can be got rid of by skimming. The paper is then slowly drawn off, so that by capillary attraction most of the superfluous liquid can be removed; it is then allowed to dry spontaneously in a warm room, being hung by American clips from a line. The size can be used again and again by warming before use.

Another size, suitable for Saxe paper, old make, No. 174, is:—

Arrowroot	100 grs.
Nelson's gelatine	25 "
Alum	15 "
Water	20 ozs.

This is mixed in the same way as the above. The Saxe paper, being tougher, is suitable for large work, and is not so apt to tear in the subsequent operations.

The iron sensitising solution is best obtained from the Platinotype Co., 1 Charlotte-street, Bedford-square, W., and is sold in two solutions, A and B respectively, both sensitive to light, and are mixed in the following proportions:—

A solution	3 parts
B	7 "

Of this take 7 drams and make up to 1 oz. with distilled water, and add and dissolve by stirring

48 grs. chloro-platinite of potassium.* Chloro-platinite of potassium should be in transparent ruby-colored crystals. Some specimens are yellowish, these should be discarded, as they only tend to produce bad results. The cost is about 18/- per oz., but is subject to fluctuation.

The above solution will not keep above twenty minutes, the iron being reduced to a ferrous state when it is no longer sensitive to light; so no more should be mixed than is required. The iron solution, if it has been kept for some time, should be tested to see if it has been reduced to a ferrous state; this is done by a weak solution of ferricyanide of potassium, which gives a blue precipitate with ferrous, and brown with ferric salts. Should the solution have become at all ferrous it will be of no use for this process.

The paper is coated in a room lighted by gas, or daylight filtered through one thickness of canary medium, and heated to 70° F. by a coal fire; a gas stove dries the atmosphere too much. Anyhow, it is advisable to sprinkle the floor with water, to prevent the paper drying too quickly.

The paper is laid on a glass slab slightly larger than the paper, about 28 in. × 24 in., on which the paper is fastened, sized surface uppermost, at two adjacent corners by American clips. The solution is spread on by means of a squeegee, made thus:—Two battens of wood, 10 in. long and 1 in. wide and $\frac{3}{8}$ in. thick, are well varnished, a piece of sateen which has had all the dressing washed out, about 9 in. long and 6 in. wide, is folded over a piece of clean india-rubber tube, 8 in. long and $\frac{1}{2}$ in. diameter, and the two longer edges of the sateen brought together between the battens, which are then fastened together by rubber bands over the ends. The sateen is then pulled tight, and thus becomes strained over the tube, which gives a flexible squeegee, the surface of which can be renewed at a trifling cost. The sateen should never be used more than twenty minutes, otherwise the solution will be decomposed. The solution is swept over the surface of the paper, taking great care not to injure it by rubbing up the surface.

When an even coating is obtained the paper is hung up to get surface dry, during which time another sheet can be coated, and the first will be ready about the time the third is coated. About two drams of solution are required for a sheet 22 × 26.

It is then dried in front of a fire, on a hot plate, taking great care not to overheat, otherwise the image will be flat; and also not to dry before moisture has gone from the surface, or else the solution will dry on surface and be washed off during development.

The paper is then stored, printed, and developed on oxalate of potash, in the usual way.

* In his specification, dated 1880, the patentee said:—"I prefer to use for ordinary purposes an aqueous solution, containing, in each fluid ounce, 60 grains of potassic chloro-platinite and 60 grains of ferric oxalate, for application to the paper or other suitable surface. I do not confine myself to this proportion of ferric oxalate, but may use less or more, according to the result desired."



Psychic Photography.

The Stranger introduces the subject.

"**W**HAT I can't understand," said the stranger, "is why you photographic fellows are so narrow-minded about 'spirit photography.' You have made any public declaration of belief practically impossible. I know two photographers, both known and respected wherever English-speaking photographers are found; both say they have again and again found human-like forms (invisible at the time of exposure) photographed on the plate with other objects that were visible. Both these photographers find the forms a nuisance, and both say that though they would like the subject thrashed out, they dare not speak of it, or shew their negatives, lest they should be condemned as lunatics and suffer in business and reputation."

The Editor states his position.

"I have been charged with 'believing' in 'spooks,' but it seems to me that in such a matter one ought not to 'believe,' but to know, or suspend judgment.

The subject was brought strongly under my notice a few weeks ago, when a journalistic friend (non-photographic) asked me to assist him by verifying some experiments that were to be made in his presence, the results of which he intended to publish. The photographer gets very plain and recognisable 'spirit' portraits on many of his plates, with ordinary sitters, and says he finds them a great loss and annoyance, because he dare not shew them to the sitters, and has often to arrange re-sittings. It was under much pressure that he consented to make experiments with my journalist friend, and on the distinct undertaking that neither his name nor place of business should be mentioned or indicated publicly. I consented to check the experiments on the following conditions:—

1. That my own apparatus and plates be used; the plates being marked by the maker as well as by myself.

2. That the dark-slides be filled with plates in my own dark-room, and, with the camera, &c., be carried in a locked case to and from the studio in which the trials are to be made. That the

apparatus be not handled by anyone but myself, and not leave my hands while in his studio.

3. The exposures shall be as directed by the photographer, but the plates shall not leave the slides until I return home, where they shall be developed by myself.

4. I agree not to divulge in any way the name of the photographer, either publicly or privately, without his permission.

5. Whatever the result, or non-result, I reserve the right to publish a statement of the occurrences at the experiments; undertaking, however, not to anticipate any publication you may wish to make.

6. The experiments shall be as exhaustive as possible.

7. Should the results be such that you decide to publish them as being in any way confirmatory of a belief in psychic photography, I claim the right to have the experiments repeated in the presence of, and with the camera of, one of three persons named by myself; and, should similar results still be obtained, to have them again repeated before a committee of three persons nominated by the London and Provincial Photographic Association. Of course, in the case of experiments made before these persons, their undertaking not to divulge in any way the identity of the photographer would be obtained.

The photographer has not yet agreed to my attendance at his sittings, though my journalist friend has attended two, with results that he considers very promising."

Phillip Everitt wants no lens.

"Let us be exact. We hear of spirit and psychic photography. If a fact, the latter is demonstrable, but the former not. The conditions you have laid down are good, as far as they go, but the results would still be in question, because you do not cover all the conditions. Apparently you are prepared to operate in the photographer's studio, with his accessories, &c. If the abnormal pictures are of unknown origin, I think the photographer could easily trace their cause. The conditions are amenable to the most rigorous inductive method. Let all the conditions, save one, be varied, and this in turn, until it be discovered

which precludes the abnormal pictures. I would suggest that the photographer go to some other studio, where abnormal pictures have not been taken, and that he introduce one by one the conditions which were present when one of the abnormal pictures was taken. If any results follow some valuable information could be gained.

But I think the conclusions deduced by the late J. Traill Taylor from his experiments are of great importance. First the abnormal figures were not impressed on the plate simultaneously with the photograms of the sitters. Second, that the abnormal figures were not produced by means of the lens. If these conclusions are true, why should not the photographer produce the results on plates in an original, unopened packet? Development to be done by some other person, or by the photographer in the presence of witnesses."

W. T. Stead says: "Not spirits."

"I am glad that you are endeavoring to break down the idiotic superstition which prevails among persons who plume themselves upon their science and common sense. The idea that anything that occurs on a photographic plate can be regarded as an unfit subject for discussion among photographers, because it is supposed to be associated with theories and hypotheses which run counter to the general opinion of the trade, is unworthy of rational men. The case, I take it, is simply this: Certain photographers, of unimpeachable respectability, under certain circumstances, and under certain conditions—both of which are very imperfectly understood at present—have obtained upon their plates certain appearances, such as a portrait of a deceased person, a portrait of a living person, who was absent at the time of exposure; a picture of a statue, or a bust, or of another picture, and sometimes pictures of animals, birds, and landscapes are obtained in this way. The ordinary superstitious explanation, on the one side, is that they are the result of fraud, for which there is not a particle of evidence in many of the cases under review; and the other is that the pictures so appearing are the portraits of the spirits present in the operating room. As to the latter hypothesis, which I have called superstitious only because it is often adopted without investigation or examinations, it is the handiest hypothesis to clutch hold of. It is obvious, however, that when the plate reveals a picture of a statue, or a copy of a well-known engraving, or a view of furniture, the hypothesis that the camera has merely photographed a ghost who happened to pass along during the sitting, fails to account for the phenomena with which we are dealing.

Although not a photographer, I have been making a number of experiments with a photographer in the West End of London, who has kindly consented to aid me in my investigations. The full report of these is in the current (October) number of *Borderland*, with several of the psychic pictures so obtained. The experiments are still in progress, and I shall be glad to communicate the ultimate result when it is arrived at, but at present we are very far from finality in the matter. The agency which, whether myself or not myself, moves my hand when it writes automatically, has

asserted very positively that the psychic photograms are never the photograms of spirits, but are rather the photograms of thought pictures, or spirit moulds, which the invisible intelligencies use for purpose of identification or of test, just as a man may carry a photogram of his employer on his card of business."

Miss Power appeals to prophetic promise.

"'Greater things than I do shall ye do,' said Jesus; yet neither apostles nor disciples did any greater thing than He did, proving that they have yet to be done. And as most photographers are professed disciples of the lowly Nazarine, may it not be reserved for them to accomplish the greater things? And would it not be a greater thing if by the aid of photography they could give to the many honest doubters such a tangible proof that the dead do rise as finding friends and relations known to be dead clearly defined on the same photogram as themselves, such as numbers of amateurs everywhere are now getting would give? Such proofs would produce more converts than all the sermons on immortality ever preached.

Certainly they who seek the Kingdom of Heaven must first have faith that there is such a kingdom. Faith is but the first step on the road which should bring the necessary desire, energy, and endurance to seek for themselves.

We have multiplied modern proofs, far more convincing and numerous than the Bible contains, that the dead do rise, and are able and willing to appear to their loved ones just as freely as in the Bible days. A few of these W. T. Stead has collected in 'Ghost Stories,' 'More Ghost Stories,' &c., but as every phenomenon in nature is subject to law, so also is the reappearance of our beloved dead. One of the laws which govern this advanced process of photography is put forward for the benefit of photographers in pages 23 to 27 of a shilling work entitled 'Twenty Photographs of Risen Dead.' Much valuable information on this subject can also be gleaned from 'The Veil Lifted.'

If Jesus, after he was crucified, dead and buried, could appear time after time to his disciples, even after the doors were shut; if, as the apostle states, 'Many of the saints that were dead arose and appeared to many,' what is to prevent our own departed friends from obtaining, in their translated state, the same intelligence and using it in the quiet of the photographer's studio, in the hope of revealing to those they remember and still love that they also are risen?

Not until photographers completely develop and reproduce from their fogged plates, and freely discuss and record in print, these abnormal appearances as any other photographic fact, will they possess themselves of laws which will make the past achievements of photography sink into the insignificance of a childish pastime compared with the stupendous results it has yet to unfold to the wondering eyes of man.

Is the prejudice of the professional photographer to compel these stupendous results to fall into the hands of the already numerous and skilful amateurs? Time will show. Often in the history of the world has the first become last, and the last first."

W. Ethelbert Henry asks if "spooks" ever come when business is good?

"This is a subject with which I do not feel competent to deal seriously, inasmuch as all the examples of so-called 'psychic' photography that have come under my notice were palpable impositions.

I will not say that I believe it impossible for 'spirits' to leave an impression upon photographic plates; but I will maintain that it seems utterly ridiculous to believe that 'spirits' of the departed have the power (even if they have the inclination, which I doubt) of appearing in the material garments fashionable at the time of their death. Again, it seems equally absurd to credit 'spirits' with appearing enveloped, all but the head, in sheets or tablecloths ineffectively draped about them, and, as with one accord, clutched together at the throat, or cast over one shoulder, as if aping some piece of statuary, but without the ability of offering any improvement.

It seems to me that granted the spirit may be empowered to assume a bodily guise—which I strongly doubt—I cannot believe that material clothing has spiritual power. Yet in all the examples of so-called 'spirit' or 'psychic' photography, the 'appearances' are clothed in some such nondescript garb as I have mentioned.

Why is it that photographers who profess to be disturbed by such manifestations are so averse to having them investigated by the strictest means? Why do they content themselves by giving demonstrations (under their own conditions) before people ready to take their word as gospel? Why are such photographers so averse to having another photographer (if he has a character for keenness) present at the time of exposure of the plates? Privately, in our own little pow-wow, my opinion is because 'spirits' pay, and if the *spirits* are 'exposed' (instead of the plates) a lucrative branch of often a failing business is lost to the enterprising dealer in them.

I have generally found men who complain of psychic appearances on their plates are very mysterious in manner, beg their confidants to not divulge their names, &c., &c., *ad nauseum*; yet though apparently so anxious to be relieved of their spiritual visitants, with one accord they refuse investigation that would for ever most effectually lay the ghosts at rest. By-the-way, did any of you fellows ever know a man with a good business whose plates saw 'spooks'?

But apart from such shadowy absurdities as are generally foisted upon us as 'ghosts,' I have in my own experience had the most extraordinary appearances on some of my landscape negatives—no foggy, fuzzy horrors, shrouded in white linen, but clearly defined tangible portraits. In one negative of an old tree stump at Alvaston, there could be seen a number (something over fifteen) of perfect portraits. These were not only visible to me, but are so to every person who looks at the print; and furthermore, they are *instantly* visible, and require not the slightest stretch of imagination to make them clearly apparent.

Some people say the marvellous faces are due to inequality of light and shade on the tree trunk, yet they are there plainly enough, and I should like to have them explained."

Charles W. Gamble wants to know

If the Editor is surprised that his conditions were not accepted, and if he really believes they ever will be?

"It is all very well for Mr. Stead to talk about the 'idiotic superstition' which prevails among persons who plume themselves upon their science and common sense. Such persons maintain an attitude which is the reverse of superstitious. They simply refuse to give credence to the reasons which are generally given in explanation of the phenomena. The onus of proof rests upon those who assert that they are produced by particular means and agencies.

"If a man brings you a photogram of himself surmounted by an indefinite figure, and tells you that that figure is a photogram of the spirit or 'spirit mould' of his father, you ask him to prove his case. If he does not do so you are strictly justified in refusing to believe his assertion on the grounds that you ought not to be expected to *believe* that which has not been proved. Neither are you justified in asserting that it is not so, unless you on your own part can prove your assertion. You simply maintain an attitude of suspended judgment. Can anyone record an authentic case? Is there in existence a so-called spirit photogram which is really what it professes to be; one in which the *bona fides* are beyond question? If so, we should like to see it. While waiting for such, we bear in mind that there are very numerous instances of such so-called 'spirit photograms' which have been proved up to the hilt to be most shamefully fraudulent.

There are doubtless many good and sincere people who would blush for shame at the thought of conniving at a lie, who really believe in the general explanations that are given of these phenomena. The human mind is in many instances, probably in the majority of cases, dissatisfied with things that are purely tangible. Given a hysterical temperament, which is just as common in men as women, the many will refuse to believe that it is so, and people can be brought to believe anything. Being honest themselves, they assume others are so. They believe because they want to believe, and the feeling is traded upon by charlatans of every description. It has been so for all time past, and probably will be for ever. For underneath all their statements lies the belief in supernaturalism, which warps men's and women's minds, and sways their judgment. For those who do not believe in such agencies, they must perforce decline to accept as truth anything that cannot be experimentally demonstrated and verified. But while one maintains this attitude as the only one possible, while holding such a belief, we have no right or title to expect others to agree with us unless they are so disposed. They keep their opinions, we keep ours. When they can prove the truth of their beliefs we shall believe them. We can only ask them to be careful lest they be deceived, and with the recent exposure of the miserable affairs in the Theosophical Society, and of Eusapia Paladini, surely they will bear in mind that for those who will be imposed upon there are always imposters to do the work."

Thomas Fall says: "Deluded Mortals."

"What a grand chance for a boom. You just give ninety per cent. of the photographers of Great Britain a ghost of a chance of producing the faintest trace of a spirit photograph in their negatives, and they will hail you as a true benefactor in these 'want of business' days.

I am open at any time to help on such halcyon days, and if by any means a substantial or even a suggestion of anything spiritual can be induced to impress itself on my negatives in one or more of my businesses you will not find me backward in proclaiming it. Why? For the very good reason that I see a fortune in it. I have had friends in the past who have had remarkable experiences in the spiritual world; friends, too, above suspicion of real fraud, but I have never prevailed upon them to give me a chance of sharing those experiences, and I may say I have approached them in all seriousness, and never in a spirit of levity or ridicule. My experiences in spirit photography have simply proved satisfactory thus far: that fraud has been perpetrated.

Mr. Stead, or any other expert, would find in me a ready experimentalist; not afraid of my name being known as such, I may say the contrary—I should be very pleased to be a party associated with a successful demonstration, though I fail to see the utility of spirit photography, except as a decided financial gain to the lucky photographer who succeeded in securing spirit phantoms in his negatives."

E. J. Wall sums up.

"Well, stranger, as a 'photographic fellow,' let me advise you not to judge us too harshly. If we are somewhat scornful of the so-called 'psychic forms' it's the fault of the frauds and fraudulent who first manufactured psychograms for the public, and *drew cash for them*.

The Editor is of course extremely cautious, as usual; and, as usual, leaves you in as delightful a maze as before as to what he does and does not believe. His conditions are good, but I agree with our friend Everitt that they do not go far enough. I would entirely alter the surroundings of the camera and sitter by change of background,

accessories, etc., or repeat the experiments in another studio, which would be tantamount to the same thing.

Mr. W. T. Stead, as usual, hits out fair and square; and all I ask is that he shall actually show us some of the psychograms, or whatever else you like to call them, in the negative form—I will not accept half-tone reproductions nor silver prints without the negative—and convince us that they have been produced under such conditions as preclude jugglery. Prithee, friend, remember that so much undoubted fraud has been associated with this subject, that scepticism and suspicion cannot be avoided.

I regret that Miss Power should find it necessary to appeal to a work for which I have an intense admiration as a human literary compilation, and to others which cannot be said to be written from the platform of dispassionate, unbiassed common sense.

The cynical W.E.H. of course 'goes for' the spooks, the reason being that he is far too practical to believe till he sees. Oh, thou Didymus!

Bravo, Gamble, but why on earth did you go and say the very things I wanted to? Is this telepathic communication? If so, it was rather mean of you to take advantage of me.

Mr. Fall is perfectly fair and honest. He has tried in the fire of practical work psychic photography, and finds it fraud, hence his unbelief; but he is open to do anything in the way of experiment. So am I; for years I have been spoiling for it, but without result, no one will accept my help; no one will show his or her psychic form on my plates. My position on this subject is summed up in the following quotation:—'True science knows but three states of mind—denial, conviction, and the vast interval between, which is not belief, but suspended judgment.'

If you offer me a lump of dirt-encrusted heavy black stuff, and tell me you want one hundred pounds for it because it contains pure gold to that amount, and yet refuse to let me verify by chemistry the existence of that gold, why grumble if I say, 'Well, it may be so, but till you let me refine your lump I decline to pay.' This is what psychologists have done to photographers."

Lamps for Generating Acetylene Gas.

AN invention has lately been perfected by M. Rossbach-Rousset, of Berlin, whereby acetylene gas can be generated as used.

According to a patent recently taken out by him in this country, the following description is given:—

In the drawing, which shows the lamp of this invention in vertical section, (A) is an outer casing, (B) a pressure casing, (C) a carbide of calcium container, (D) a wick or wicks, (E) a spring, (E¹) a spring catch or pawl, (F) the burner, (G) a water container, and (H) a float with valve (I).

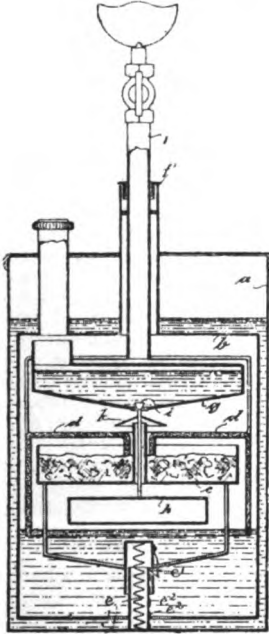
The container (C) in which carbide of calcium is placed, is normally pressed upwards by the spring (E), and moves downwards against the resistance of the spring according as the volume of the decomposed carbide of calcium increases;

its upward movement being limited by the spring catch (E¹) taking against one of the projections (E²), or the like provided on a tabular part which encloses the spring (E), said catch being disengageable when desired by any ordinary suitable means.

The water for the decomposition of the carbide of calcium is drawn partly from the water in the lower part of the casings through the wicks (D) and distributed in fine particles over the carbide of calcium, and is partly supplied direct from the water container (G) past the valve (I), which is operated by the float (H), the water first falling upon the guide cone (K) and then spreading out on to the wick. Upon the commencement of the evolution of the gas, the float lifted by the water will open the valve (I) and water flow past this to

the carbide of calcium through the wicks (D) in the form of fine particles. When the requisite gas pressure is attained the float falls by reason of said pressure lowering the level of the water, and the valve (1) closes, the further supply of water then taking place through the wicks, so that the supply of water to the carbide of calcium is regulated automatically by the pressure of the gas, or only one of these two ways for the supply of the necessary water for the decomposition of the carbide of calcium may be adopted, namely, the float and valve appliance for the larger kind of lamps, and the wick appliance for the smaller kind.

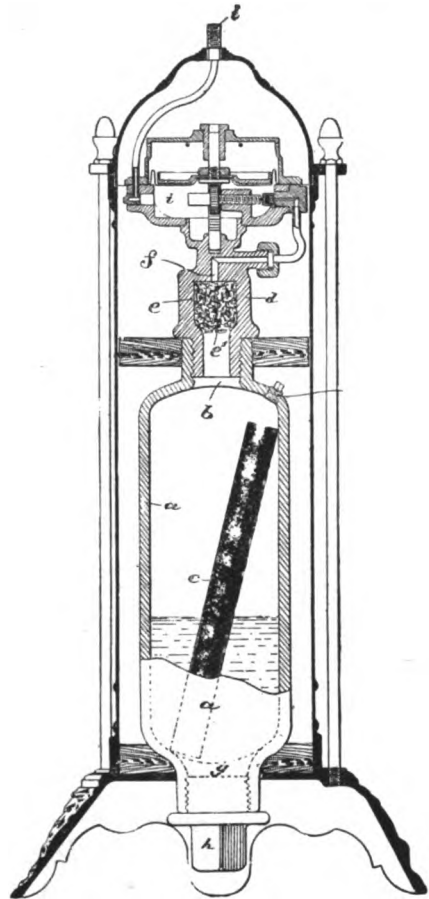
The wicks may be lifted out of the water and thus completely stop the production of gas by



raising the burner tube through the stuffing box or gland (F¹), or by making the burner tube telescopic and sliding the lower part of the same upwards.

The following is another form of generator of London origin:—

A metallic cylinder is represented at (A), at the lower end of which is a screw plug (G H) for cleaning purposes. Water and a stick of calcium carbide are introduced by unscrewing either (D) or the plug (B¹). The gas is at once confined under



pressure, and passed as required through (E) into a regulating chamber (I); thence out at (L) to the burner. We understand that the inventor, Mr. E. G. Gearing, has with one charge obtained a high candle-power which has been maintained for several hours.—*Optical Magic Lantern Journal*.

Photographing Interiors by Flash-Light.

BY T. PERCY.

I RATHER fancy that many photographers have a poor opinion of the capabilities of magnesium flash-light for negative making. Judged by the very poor results that are often shown, there certainly is good ground for such opinion; yet carefully and intelligently used the magnesium light can become a great power in the hands of a smart man. Take a case of dark interiors, which are often

quite impossible with the small daylight illumination they have, such can be done with the magnesium flash with comparatively little trouble. Oftentimes a manufacturer requires an interior of his workshop, with his men at work. Only those who have had such a task know the difficulty with daylight when the general lighting is poor; with magnesium, however, excellent results can be produced. Of course in the case of very large

rooms the work becomes difficult, but these do not come in every day's work.

The general fault that the average flash-light picture suffers from is under-exposure. Parts may be properly exposed, but taken as a whole, insufficient exposure is the most obvious failing. This is due to several causes; more often than not the light has been badly distributed, and there has not been enough magnesium used. In such a case, parts of the interior near the source of light may be properly illuminated, while those situated some distance away are very poorly lit, and consequently the image in the negative representing these parts is thin, and prints too dark; the contrasts between these and the lighter portions being unpleasantly strong. This defect is often exaggerated by unduly prolonged development, the idea being that with such practice more can be obtained out of the dark parts. But after a certain stage has been reached, prolonged development only does harm, inasmuch as the fully exposed portions become unduly opaque and, on printing, the high light gradations are not produced unless (and not always then) printing is carried on to such an extent that the thinner portions are very much over-printed. In such a case it would be very much better to stop development at an earlier stage and trust to masking the thin parts of the negative to improve matters. The amount of magnesium used is too often much less than is required, and with most flash-lamps the waste is far greater than is generally thought. This is often due to careless usage as well as to the bad construction of the instruments.

The light for satisfactory work must be well diffused—this is an essential point. The flame of burning metal with many lamps is small, and with such it is necessary to use diffusers to scatter the light, a large brightly illuminated area, not a comparatively small flame, is required if we are to avoid the unpleasantly sharp cast shadows that generally proclaim the badly made flash-light picture. Now diffusers, though sometimes necessary, should always be avoided when possible.

They are impediments to getting ready quickly, and mean so much extra for the generally overloaded photographer to carry. More serious, however, is that they add to the risk of fire.

A man who intends to photograph a room of any size, if he intends to use lamps, will have to provide himself with several, and a battery of from three to five, with the necessary connections, will not leave much margin out of a five-pound note. I am speaking now only of the best lamps, for those of bad design and faulty construction are a source of continual annoyance and danger. This outlay may not be worth the while of every photographer who has only occasional work of this kind. I propose to describe a plan which I have worked with considerable success, and one which is simple and easy of carrying out. This is the use of a simple flash-powder readily prepared and, according to my experience, perfectly safe in use. Magnesium by itself does not readily burn, and for this reason and for the purpose of increasing the brilliance of the flash (really to insure perfect combustion) it has been the practice of many to mix certain substances, as potassium chlorate, potassium nitrate (saltpetre), and other oxidising bodies with the metal. Some of these mixtures are decidedly dangerous, and accidents have occurred while using them. The danger is increased when the mixtures are burnt in lamps. Here the burning takes place in a more or less confined space, and the risk of serious accident is great. If such mixtures are ignited and allowed to flash unconfined there is not nearly so much danger. It must not be assumed that the danger is entirely due to the fact that magnesium is burnt in conjunction with the substances named, for the writer is aware of an instance when a very serious explosion took place when the metal alone was burnt in a small hand lamp.

With care, the method to be described gives excellent results, is easily worked, and, as I said before, I have found it perfectly safe.

(To be concluded.)

❧ Psychography. ❧

A New Science ?

UNDOUBTEDLY the most interesting publication of the past year from the speculative point of view, was an article by W. Ingles Rogers, in *The Amateur Photographer*, of November 22nd. In addition to the article itself, which we summarise, and the illustrations which we reproduce, there is an able editorial criticism, a medical criticism by Dr. Albert Bowhay, and sundry corroborative matter and additional illustrations, for which we must refer our readers to the original publication.

Mr. Ingles Rogers states that one day, when sitting in his dark-room waiting for a very tardy plate to develop, his gaze fell upon an undeveloped plate standing on the bench, and, falling into a reverie, he sat for half-an-hour gazing steadily upon the undeveloped plate. On rousing, he found that the plate in the developer was ruined, and being uncertain whether the other plate had been exposed or not, placed it in the developer. Nothing appeared but a patch of fog; and after thinking

on the subject for awhile he came to the conclusion that it might be caused by some actinic projection from the eyes. We tell the rest in his own words.

"I decided this time to concentrate my thoughts for as long a period as I possibly could upon one object, after fixing the object distinctly on the retina. For this purpose I chose a shilling, and holding it against the light of my dark-room window, gazed at it persistently for a full minute. Then I closed my eyes, and after drawing the yellow screen to exclude all actinic light from the room, and placing the plate in position, I leant back in my chair, and fixed my eyes upon its centre, allowing nothing but the image of the object I had just impressed upon the retina to occupy my mind.

"I sustained this attitude (as I afterwards ascertained) for forty-three minutes! The strain, both physical and mental, was intense; several times I felt myself passing from the state of concentration into coma—the duration of which, had

this actually occurred, I could not pretend to guess—but by sheer force of will compelled myself to a persistent contemplation of that shilling.

"I firmly believe that had I continued another five minutes, I should never have been able to rid myself of the idea that my head was a big, blazing, burning shilling, and my neck the pivot on which it everlastingly turned! I allowed the striking of an adjacent clock to end the most arduous task, both for body and mind, in which I had ever engaged.

"It was not for two whole days that I ventured to develop that plate, and, well, fig. 1 is the result.

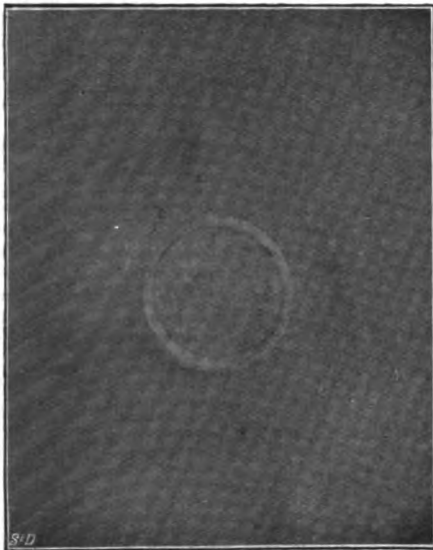


FIG. 1.

"The appearance of the coin in the psychogram (which is, perhaps, the best term that can be found for the phenomenon) is admittedly indistinct;

but it is sufficient to show that I was on the right track, and that my theory bid fair to be satisfactory.

"The above record dates as far back as September, 1894, since when I have been induced to push my observations a little further, and to make another experiment. Acting on the advice of an authority in publishing matters, however, I determined that this second test should take the form of a demonstration before a select committee of gentlemen interested in the subject, and under the personal supervision of a medical man. Through the courtesy of the latter gentleman, the experiment was conducted in his surgery, and the letter appended at the end of this article will, I think, satisfy the readers as to the *bona-fide* nature of the test.

"Since my adventure with the shilling, I had evolved two or three important facts, viz.:—

"(1) That the coin not having been accurately focussed in comparison with the distance between my eyes and the plate, it necessitated a much longer exposure than would have been required under perfect conditions.

"(2) That these conditions consisted in having both the plate and the object to be reproduced in the same plane, and at the same distance from the eyes.

"(3) That if a larger plate were used than the one used in my first experiment (which was a rapid quarter-plate), two impressions would be obtained—ONE FROM EACH EYE—and at respectively the same distance from each other as the eyes.

"(4) That by means of accurate measurement and timing, the exposure necessary for the transmission of the impression might be reduced from forty-three to twenty minutes, provided, of course, that a plate of the most rapid kind were used.

"All the above conditions were duly observed, and the result of the test was most satisfactory.

"On this occasion a postage-stamp was made to take the place of the coin, as being easier to manipulate, and though much detail is necessarily lost in the reproduction here of the original 'psychogram,' yet the appended illustration (fig. 2) will be sufficient to prove the genuine existence of the principle I have been lucky enough to discover.



FIG. 2

"A repetition of the experiment may possibly be the means of bringing about a better result; but the reader can have no idea of the mental strain involved in this remarkable process, unless he tries it for himself, and very many modifications of its *modus operandi* will have to be made before its practice, even as far as I have gone, becomes anything but an arduous, scientific undertaking."

The last experiment was made in the presence of Dr. Albert Bowhay, Nicholas R. Rosekilly, and Robert P. Coath; who all testify to the absence of any trickery or chance error. To secure focussing, a stereoscope frame, without lenses, was used. The picture-holder first carried the card with the stamp upon it, which was replaced by the plate.

While we cannot dwell at any length upon the subject, we wish to ask Mr. Rogers two questions. 1. Is he at all sure that he *can* concentrate his mental gaze upon one image, without lapsing into vacancy or allowing the intrusion of innumerable other thought-forms? Can he do this for ten, or even five minutes (not to speak of twenty or forty-three)? 2. Has Mr. Rogers specially practiced what we have called stereoscopic vision (see November issue, page 246), or is it natural with him when gazing at an object a few inches away, for his eyes to take and maintain positions with parallel or even divergent axes?

If Mr. Rogers can concentrate his mental and physical vision for forty-three minutes, and can, at the same time gaze at two separate places with his two separate eyes, he is probably unique in his powers, at any rate so far as Western nations are concerned. Certain Eastern Yogis, who have

made this sort of concentration their special study for a long time (and to a smaller extent, some Western oculists) could manage the concentration; but even these people usually concentrate their gaze, both physical and super-physical, upon one spot or object.

We dwell upon these points in order to suggest that fixity of gaze to the extent that Mr. Rogers thinks he used, is probably not necessary to the experiment; and also that if such concentration really is requisite, the immense majority of photographers are absolutely incapable of repeating Mr. Rogers' results. It is well to point out this fact lest half-a-dozen or half-a-hundred people, finding that *they* can not secure the results, should condemn as a fraud the man who says he has done so. We should like Mr. Rogers to repeat his experiments with considerably decreased time of gaze: say, a minute; or even a few seconds, and would suggest that he illuminate his object as intensely as possible, and develop his plate in absolute darkness.

In conclusion, we would warn our readers, especially the more fine-nerved portion of them, to walk very warily in "concentration" experiments. They are amongst the first steps in certain occult practices, and should not be undertaken except under the direction of someone who thoroughly and practically understands the work. Such experiments have completely overthrown the mental balance of many an aspirant ere now, and though there are probably not many photographers in these bustling times who have sufficient persistence to lead them into danger, there may be some to whom the word of warning will be valuable.

Two New Lenses.

~ The Platystigmat Lens. ~

BY THE REV. T. PERKINS.

YET another lens has made its appearance as the year 1895 is drawing to a close. Truly great, indeed, has been the activity in optical factories during the year. I do not suppose that rapid rectilinears will all at once be driven out of the market, or that wide angled rectilinears will be obtainable only of dealers in second-hand goods, or through the advertisement columns of photographic papers; but yet there can be no doubt that many of the new lenses greatly surpass the old ones in their performance, and will gradually come into general use. The new lens to which I refer is the Platystigmat, just brought, after a long series of experiments with different kinds of glass, and various curves, to a successful issue by the firm of W. Wray, of Highgate. This lens is at present only made with a focus of five inches, but doubtless, in due course, other sizes will be introduced, the initial difficulties, which were by no means slight, having now been overcome. The lens consists of two components, symmetrical in all respects except a slight difference in color correction. Each component is itself composed of three glasses cemented together. As in many of the modern lenses, one of these last-mentioned is of glass which would

not bear exposure to the air, but as this is placed in the middle, between the other two lenses, each made of very hard and durable material, there is no fear of any deterioration in the completed system. The optician set before himself the task of producing a lens that, over a limited area, would work with a large aperture, and so take the place of rapid rectilinears; covering, however, with full aperture, a larger circle with perfect definition than any of the older lenses would do, and, at the same time, when stopped down to a moderate extent, would embrace a considerable angle giving good definition all over the larger sized plates. Moreover, he resolved to obtain these powers by flattening the field without introducing astigmatism, a difficult thing to do, and one that was formerly thought impossible. If he has failed to arrive at absolute perfection, the result is so near perfection that it is only on hard test subjects that any shortcomings can be detected. Of course it is not claimed that the lens is a worker of miracles, but, as the result of careful working, I have found it capable of doing wonderful things, as will be seen from what follows.

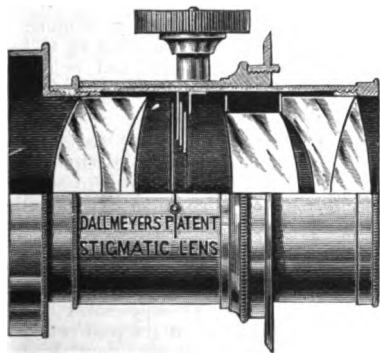
With the largest stop, whose diameter is

accurately one-eighth of the focal length, it will sharply cover a quarter-plate to the corners, representing a flat surface placed at right angles to its axis on a perfectly flat field. Towards the end of a half-plate, however, there is a falling off in definition, which can be cured by stopping down, as the lens is provided with an iris. The stopping down can be gradually done, and the area of good definition will be gradually extended as the iris closes. $f/16$ will give good definition on a half-plate, though sometimes, if the objects towards the end of the plate are nearer than those at the centre, it may be necessary to carry the stopping down rather farther. By the time the aperture of the iris is reduced to $f/32$ it will, for most subjects, be found that the sharp area has been extended all over a whole plate, the largest that this 5 in. lens will cover without showing dark corners. Astigmatism is not completely eliminated, but is reduced to a very small amount, and is practically absent if the stops for the various sized plates mentioned are used. The field is not absolutely flat, but is very slightly *convex* to the lens, and in this respect it is just opposite to the usual forms of lenses, in which the field is more or less *concave*. This slight convexity is manifestly an advantage in many cases, as, for instance, when photographing the exterior of a building, the image of one angle of which falls nearer to

the centre of the plate than those of the other corners, which are themselves further from the camera. In fact, it is seldom, except for copying purposes, that an absolutely flat field is required, and it is convenient to have some lenses in one's stock giving concave, some giving convex fields; provided that this concavity or convexity is not carried too far, and in the Platystigmat the convexity is very slight. The back combination, despite the slight over-correction for color, may be used as a single landscape lens of about 10 in. focus. The field, with this lens alone, is also slightly convex if a wide angle is included, but if stopped down to about $f/23$ or $f/32$, which will give good definition on a 12×10 plate, the largest size on which I have tried it, the field will be practically flat. How much larger a plate it would cover, I do not know, but I found no dark corners when I raised the rising front of my 12×10 camera as far as I possibly could. It will be seen from the foregoing description that the lens is a most useful one, combining within itself a lens which is a good deal better than a R.R., a W.A.R., and a wide angled landscape lens. The lens with iris diaphragm is priced at £4 5s. with the usual 5 per cent. discount for cash; so that the price, considering its multifarious power, is by no means high, and should procure for it a ready sale.

The Dallmeyer Stigmatic Lens.

Another remarkable introduction is the Dallmeyer Stigmatic Lens for portraiture. This lens has been designed to include a larger angle than existing forms of rapid portrait lenses. At the full aperture



of $f/4$, it is absolutely free from spherical aberration, *i.e.*, gives a perfectly defined image. It is non-

distorting, and gives a flat field with equal definition from edge to centre, with but very slight remaining traces of astigmatism. It covers altogether an angle of about 60° , hence it is particularly adapted for short operating rooms, and has greater equality of illumination than many existing portrait lenses.

The Dallmeyer Stigmatic Lens is composed of two triple combinations, the whole of the glasses used being of exceptionally white and clear quality, and free from mechanical defects.

Many of our readers will remember the welcome that was accorded to the "Patent Portrait Lens" system of Dallmeyer, by which diffusion of focus was secured by slightly unscrewing the back cell. A certain amount of spherical aberration was thus introduced, resulting in a more equal distribution of definition over the planes focussed. The new Stigmatic Lens possesses the same advantage, in addition to its other merits.

A second series of the Stigmatic Lens will shortly be placed on the market by the same firm; it will be for general work, with an aperture of $f/6$, and will be of the so-called "wide-angle" type.

£500 in Prizes.—An entire novelty in exhibitions, and one that should be greatly appreciated by picture-makers, is announced by C. W. Faulkner & Co., 41 Jewin Street, London, E.C., who will send particulars to any of our readers making application. The show will consist of paintings, designs, photograms, &c.; all of which will be considered with a view to their suitability for reproductions as presentation plates, frontis-

pieces, pictures for framing, Christmas and New Year cards, calendars, and other advertising purposes. £500 will be given in prizes, and copyrights will be purchased or commissions given to the value of a further £500. The pictures must be delivered on January 23rd or 24th, at the exhibition rooms, which will be the gallery of the Royal Institute of Painters in Water Colors, Piccadilly, W.



We Two.—The report of the result of this competition and some remarks on Competition No. 1 are unfortunately crowded out, but will be given next month.

Do not forget our prize competitions; or the fact that if you are a member of a photographic society you may win valuable prizes for your society as well as for yourself.

A suitable Memorial to the late J. Traill Taylor will probably be decided upon in the near future. A meeting was called for December 21, for the purpose of appointing a committee to carry the idea into effect. Alexander Mackie, of 3 Upper Baker Street, N.W., has consented to act as hon. secretary.

There are many alterations in this issue, mainly based on readers' suggestions. We have been strongly and frequently urged to discontinue running "Current Topics" and "Editorial Chat" amongst the advertisement pages, and now follow the suggestion, so that the whole of our matter becomes available for binding.

Prize Competitions.—£5 5s. is offered for the best practical article on a photographic subject; not less than 1,000 and not more than 5,000 words. May be illustrated or not.

£5 5s. for the best practical article on a photo-mechanical subject.

One guinea for the best, and half-a-guinea for the second best, set of three photograms of Irish scenery (landscape, seascape, or architectural), with or without figures.

The last date for receiving entries is February 29, 1896. Full particulars of rules governing these and further competitions appeared in our November issue. A reprint will be sent on receipt of addressed wrapper.

Awards in Competition No. 1.—The awards are as follows:—

Set No. 24	Equal (divide the prizes).
" " 10	"
" " 11	—third
" " 48	—fourth

} honorable mention.

The names and addresses of the competitors are:—

No. 24. W. Northwood, High Street, Wordsley, Stourbridge.
 „ 10. Miss Christian H. Curle, Priorwood, Melrose, N.B.
 „ 11. Morris May, 3 Colville Terrace, Beeston Hill, Leeds.
 „ 48. Bernard Lintott, Horsham, Surrey.

SOCIETIES' PRIZES.

Present Scoring—

Society.	Points
Edinburgh Photographic Society..	1½
(Won by Miss Christian H. Curle.)	
Leeds Camera Club	½
(Won by Morris May.)	

Our Illustrations.—The portrait used in conjunction with the initial letter on page 1, is from a photogram by Wm. Gill, of Colchester; the views of the Camera Club Smoking-room and Lathe-room are from photograms by Charles W. Gamble of "Ours." The two-page supplement to all editions is a heliochrome (three-color) reproduction of the painting "Vanity Fair," by S. Melton Fisher. The original painting was exhibited at the Royal Academy, 1895, and the reproduction at the Exhibition of the Royal Photographic Society, 1895. The reproduction is from blocks by the Heliochrome Company, Limited, printed in the heliochrome inks of A. B. Fleming and Co., Limited, who are the proprietors of the original picture. Other illustrations are credited elsewhere. Our thanks are due and hereby freely given to all who have so willingly aided us with their ready help.

"The Photogram de Luxe" has been a disappointment to some of its subscribers; though the bulk have proved their satisfaction by renewing. The issue was commenced entirely in answer to pressure from our friends. It entails a great deal of extra work on printers, publishers, and all connected with it, and has left us no profit, but rather a loss. Needless to say, we are far from satisfied. We promised to give extra supplements to the value of the extra subscriptions received, and have more than done so; for the subscriptions have been less than five hundred, which do not more than pay for the heavy paper, envelope packing, and extra cost of printing on so small a number. The *de Luxe* will run for another year, a specimen copy of the January issue will be in the hands of each of our special agents; and we think it will be a *very much* better thing than last year, for we are further improving the paper, printing, &c. Subscriptions (cash in advance, six shillings; post free, nine shillings) can be received up to January 15th, after which subscribers will be unable to obtain the numbers issued previous to the date of their subscriptions.

We do not wilfully allow so important a supplement as "Old Liège," given in our last issue, to pass without introduction to our readers, but inadvertently, our comments last month were omitted. The work we consider well worthy of a frame, for it is a pleasing reproduction of a charming water-color. Probably few of our readers realise how very recently it has become possible to give them the wealth of supplement illustration that we have provided in the past two years,—perhaps the very lavishness, now, leads to a certain amount of indifference. The picture in question is a good example of the work of Hare and Co., Ltd., Bride Court, E.C., to whom readers are indebted for many of the most artistic covers, presentation plates and frontispieces that adorn the modern magazines and books. It is an example of the hand and brain selection method, as compared with the pure camera-selection method of color work that is illustrated in the supplements to our November and our current issues. It is well worth while to compare the results, for both methods have distinct beauties and advantages. And it is perhaps worth while to point out that in a few years' time these early examples will probably have an almost fictitious value.

Current Topics

The Brixton and Clapham Camera Club have arranged an excellent programme for their winter session.

The Hackney Exhibition was a greater success than ever; and bar the crowd—inseparable from a popular exhibition in a small hall—was perhaps, the pleasantest show of the year.

The Photographic Copyright Union has abolished subscriptions, and invites all photographers to become members. Secretary: Henry Gower, Botolph House, Eastcheap, London, E.C.

The Stanley Show. The photographic section of the Stanley Show does not seem to have fair treatment. W. D. Welford, as secretary, has worked very hard indeed, but he can have little satisfaction in hanging his collection of work in a bare, barn-like annex, with damp, dirty walls. 'Tis true the pictures are not hung on the walls aforesaid, as screens are provided in the centre of the room; but the effect of the bare space is more depressing than if it were partly covered with frames. The pictures hung included several favorites from the recent leading exhibitions, and strong sections of foreign, and hand-camera work.

Ten Years Penal Servitude.—Some little time back we received an appeal from Mendel Howard, a prisoner at Wormwood Scrubbs, asking us to take steps to secure his release from ten years penal servitude. The case is a somewhat difficult one; and we have been in correspondence with his solicitors, with the prisoner, with the police, and with the authorities at Old Bailey, and have been working up the evidence so far as possible. We did not intend or think it advisable to say anything about the matter until we had, practically, a complete case for the defence, or had convinced ourselves and our solicitors that an appeal to the Home Secretary (which is the only thing now possible) was hopeless. Our friend the editor of *Process Work* has dealt with the matter much earlier than we expected, and therefore we mention it now, giving the note from *Process Work* herewith. After a very careful examination of the Court records, as well as some of the evidence in the hands of the prisoner's solicitors, we can confirm everything that is said in *Process Work*, with one slight exception, namely, with regard to the matter of the verdict. The actual verdict brought in by the jury was "Guilty, but without felonious intent." The judge (Justice Wright) said that he could not take any verdict except the simple one of guilty, or not guilty, and after some discussion, the jury brought in the verdict of "Guilty." The judge then offered, as is stated, to give a week's time for obtaining further evidence, which Howard in his friendless condition, refused, and therefore the judge gave instructions for the prison authorities to grant all possible facilities to the prisoner for preparing an appeal or obtaining evidence in support of the appeal to the Home Secretary. The prisoner's solicitors, a well-known firm of criminal

lawyers, say that so far as their experience is concerned, such an order from the judge is unique, and indicates very strongly his doubt of the prisoner's felonious intention, though there is not the slightest doubt that he was technically guilty of preparing the plates, &c., which could be used for forging bank notes and bonds. The solicitors say that the case would require considerable special investigation, and a good deal of work in the preparation of evidence, but that the charges would be covered by £50; and they think that there is a very good chance indeed, that on a properly prepared appeal to the Home Secretary, the release of the prisoner would be granted.

Next month we hope to give considerable further particulars, but meanwhile, as Messrs. Penrose and Co. have started a fund by the offer of £5, we make a similar offer, and if our readers are prepared to contribute the remainder of the sum needed, we will at once instruct the solicitors, without delaying for further investigation of our own. The following out line statement is from *Process Work* :—

We have received a long letter from Mendel Howard, now at Wormwood Scrubbs prison, pathetically appealing to us to assist in taking steps to secure his release. It may be remembered that he was convicted at the Central Criminal Court, on June 21st last, to ten years' penal servitude for bank-note forgery, which he declares he has not done. We are sorry our limited space will not allow us to produce the letter in full, but there seems good reason to believe, from enquiries we have made into the circumstances of the case, that Howard is not guilty of any felonious intention. He states that two and a half years ago he was commissioned by a Mr. R. —, whose address he gives, to experiment in finding an easy means to imitate French and German bank notes, and then to find another means to make imitation impossible. This gentleman expected to obtain as equivalent for the two processes a large sum of money from the banks of France and Germany. Howard says he set to work and openly experimented for two and a half years, discovering the two means wanted; and in experimenting he was obliged, for illustration purposes, to make a complete set of plates of 100 fr. notes, but never printed a complete bank note, much less ever issued any, although he had the plates more than one and a-half years in his possession. Had he any felonious intention he says he could have issued the notes with the greatest ease.

At his trial Howard had no counsel, and was unable to call any witnesses from lack of money and friends. He conducted his own case as best he could, and the jury practically acquitted him, but the judge would not accept their verdict, ordering them to find a simple "Guilty." This they did after considerable trouble. The judge offered to postpone sentence for a week to enable evidence to be brought forward in the prisoner's favour. Being without money, and people whom he had addressed by letter from prison not having answered him, Howard was obliged to let the sentence go. Justice Wright, in passing sentence, said that in the absence of evidence to the contrary felonious intentions must be admitted, but added that every possible facility should be given the prisoner to prove his innocence; and he (Justice Wright) would himself, in such event, obtain the prisoner's release. Since conviction the prison authorities have allowed Howard the privilege of writing letters in regard to his case. A firm of solicitors, who were unable to act for the prisoner beyond his committal, for want of funds, state they are of opinion that if proper evidence was secured, and a petition presented, Howard would obtain his release, but that it would necessitate expense. Mr. Snowden Ward, who, together with ourselves, has been written to by the prisoner, is taking the matter up, and it is thought that the necessary money may be obtained from the Photographers' Benevolent Association. Meanwhile, a defence fund is necessary for making the preliminary enquiries, and we offer to contribute £5 towards the same. We hope some of our readers, in the interests of fair play, will also contribute, so that justice may be done.

MENDEL HOWARD DEFENCE FUND.

Penrose & Co.	£5	0	0
Proprietors of <i>The Photogram</i>	£5	0	0



1. "Clouds and Weather: a Study for Navigators." By Captain D. Wilson-Barker, F.R.S.E., F.R. Met. Soc., &c. Price 6d., post free 7d. London: *The Shipping World Office*, Effingham House, Arundel-street, W.C.
2. "The Photographic Studio." By T. Bolas, F.C.S., F.I.C. Price 2s., post free 2s. 3d. London: Marion & Co.
3. "The Lantern, and How to Use it." By C. Goodwin Norton. Price 1s., post free 1s. 3d. London: Hazell, Watson & Viney, Ld.
4. *The International Annual of Anthony's Photographic Bulletin*. Price 2s., post free 2s. 5d., foreign 2s. 7d. London: Percy Lund & Co.
5. "St. Paul's Cathedral." Sixteen views by Freeman Dovaston, with descriptive notes by Rev. W. Sparrow Simpson, D.D. Price 9d., post free 11d. London: Charles Taylor, 23 Warwick-lane, Paternoster-row, E.C.
6. "Nuwara Eliya and Adam's Peak." By Henry W. Cave, M.A. Price £1 8s. net. London: Sampson, Low and Co.
7. *The British Journal Almanac, 1896*. Edited by the late J. Traill Taylor, F.R.P.S. Price 1s., cloth 1s. 6d., postage 6d. (foreign 9d.) London: Hy. Greenwood & Co.
8. *The British and Colonial Druggists' Diary, 1896*. Price, including fifty-two issues of the weekly journal, post free, 10s. London: *The British and Colonial Druggist*, 42 Bishopsgate Without, E.C.

Notices of Books numbered 1, 5, 6, 7 and 8, as well as other interesting matter, are unavoidably held over until next month.

A new Belgian magazine for amateur photographers is entitled *Lux*. The editor is Alfred Castaigne, 28 Rue de Berlaumont, Brussels.

A reproduction of Gambier Bolton's portrait of a tiger, entitled, "Ready for the Doctor," is presented with the Xmas number of *Science Siftings*.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

J. Cole, High Barnet.
 Ross & Co., New Bond Street.
 The Premo Camera Co., O. Sichel & Co.
 Vincent, Hahn, & Blaikley, Barbican.
 The Blackfriars Photographic and Sensitising Co., Surrey Row.
 Wells & Co., New Southgate.
 Messrs. Best & Lloyd, Handsworth.
 R. R. Beard, Trafalgar Road.
 Austin Edwards, Tottenham.
 Elliott & Son, Barnet

From this date *The Amateur Photographer* is to be under the editorship of A. Horsley Hinton.

A *Useful Book* on the lantern (3) has just been published by Hazell, Watson & Viney, Ld.; it is well illustrated, and deals fully with various illuminants and innumerable details necessary to one wishing to become proficient as a lantern operator. We can highly recommend the book.

"*The Photographic Studio*" (2) is the unpretentious title of an indispensable handbook for photographers about to build. It gives, in concise form, and fully illustrated, various styles of studio, and describes the merits, or otherwise, of each. Several methods of ventilation are given, and the author deals with ways of removing snow from the skylight. Without doubt the book should be owned by all interested in photography.

The great changes in The Photographic News to take place with the first number in January are not public property at the time of writing. It is to be issued at one penny; the paper and printing are to be superior to anything at present issued weekly in connection with photography. Illustrations are to be a special feature, and the amateur is to be specially catered for. Beyond this we cannot say, but we wish our contemporary a new lease of life.

"*Anthony's Illustrated Annual*" (4) is as bulky as ever, and is filled with articles of general interest. A particularly useful paper is that by A. J. Henry, of the U. S. Weather Bureau, on "Cloud Photography." The author goes fully into the subject (which he illustrates) and describes the screens and development used at the Bureau.

A really useful little article on enlarging is contributed by J. R. Greatorex, but a contribution entitled "New Photographic Studies," with its hideous examples, is utterly out of place, and has nothing whatever in common with photography. The book is copiously illustrated, and printed in the usual good style of its predecessors.

New Goods, &c., Advertised.

Cole's Patent Flexible Rising and Falling Front Camera.
 J. Cole.
 The Beernaert Plates. Oscar Schölzig.
 The "Three Swans" Paper. J. R. Gotz.
 The Premo and Premier Cameras. O. Sichel & Co.
 The "Cupreous" Art Studio. Vincent, Hahn, & Blaikley.
 Brief Chats about Lenses. Taylor, Taylor, & Hobson.
 Two Modern Studios, etc. O. Sichel & Co.
 Lanterns, etc. The Blackfriars Photographic and Sensitising Co.
 Convertible Anastigmats. Ross & Co.
 Penrose's Process Cameras. Penrose & Co.
 Stamp Photos, Enlargements, etc. Wells & Co.
 Wray's Lenses. W. Wray.
 Presto Paper. Otto Schölzig.
 The "Beaufort" Studio Gaslight. Best & Lloyd.
 The Eclipse Slide Carrier, etc. R. R. Beard.
 The "Austin Edwards" Films, etc. Austin Edwards
 Barnet Platino-Matt Bromide Paper. Elliott & Son

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk (*) indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

Title Ink. Nov. 12. Price, 1/- a bottle. W. Tylar, 41 High-street, Aston, Birmingham.

"Hill Norris" Rapid Collodion Dry Plates. Price, $\frac{1}{2}$ -plate, 1s. 6d.; other sizes in proportion. Wm. Tylar, High-street, Aston, Birmingham.

Beerheart's Printing-out Plate; series E. Dec. 4. Price (based on amount of area coated), 100s. per dozen square yards. Oscar Schölzig, 9 New Broad-street, E.C.

APPARATUS.

Electric "Sun" Lamp and Reflector for Photographic use. Nov. 25. Price, £17. Nalder & Harrison, Bow Common-lane, E.

Christmas Card Border Negatives. Twelve assorted designs. W. Tylar, 41 High-street, Aston, Birmingham.

The "Beaufort Light." Dec. Price complete, £15. Best and Lloyd, Handsworth, Birmingham.

Cole's Patent Camera.* Nov. Price, $\frac{1}{2}$ -plate, £9 10s.; $\frac{1}{1}$ -plate, £11 10s. Other sizes at special quotations. James Cole, 84 High-street, High Barnet.

Pocket Cans for Benzoline. Nov. 20. To contain half-pint or pint. Price, 6d. and 1/- Moonlight Patent Lamp Co., Fenwick Chambers, Fenwick-street, Liverpool.

LANTERNS AND ACCESSORIES.

Lantern Microscope. Nov. 14. Price not determined. Henry Wallwork and Co., Charter-street, Manchester.

Lantern Microscope Stand. Nov. 14. Price not determined. Henry Wallwork and Co.

"Hill Norris" Dry Collodion Lantern Plates. Price, 1s. 3d.; extra thin glass, 1s. 6d. Wm. Tylar, High-street, Aston, Birmingham.

Beerheart's Chloride Lantern Plates. Dec. 4. Price per doz., including twelve pieces of magnesium wire and twelve binding strips and masks, 11d. Oscar Schölzig, 9 New Broad-street, E.C.

The "Princept" Incandescent Gas Lantern. Nov. 12. Price complete, £3 10s. W. Watson & Co., 35 Danbury-street, Islington, N.

"Profanity Saver" Lantern Slide Binding Strips. Nov. 12. Price, post free, 7d. W. Tylar.

"The First Pipe;" Set of Three Lantern Slides. Nov. 12. Price, 2/6. W. Tylar, 41 High-street, Aston, Birmingham.

MANY items of general interest are unavoidably held over from this column until next month.

AUSTIN EDWARDS, Willoughby Lane, Park, Tottenham, is now manufacturing a new series of films and lantern plates.

MATERIAL REDUCTIONS in the price of plates will be made in the new year by Wratten and Wainwright. For nineteen years the plates have been made under the personal supervision of Mr. Wratten.

A NEW incandescent gas lantern for optical projection has been put on the market by W. Watson & Co., 35 Danbury-street, Islington, N. Full particulars will be sent on application to the makers.

PLATES by the yard are now being sold by Oscar Schölzig; in other words, he bases the price of his dry plates according to the area covered with emulsion. The actual rate is 100s. per dozen square yards.

THE improved "Helioscope" Lantern for this season is well worth seeing by anyone who contemplates purchase. It is better value than ever (which is saying a good deal), and should mean much business for Walter Tylar. The price is £4 4s.

A PARTNERSHIP has been arranged between F. J. Wallis and J. E. Fraser, both of Edinburgh. The firm will trade as Wallis & Fraser, 47 Lothian-street, Edinburgh, and they will stock all classes of photographic and scientific instruments and sundries.

WILLIS & Co., makers of photo-ceramic enamels to the trade, have removed from 97 Highbury-hill, N., to 70 New-

man-street, Oxford-street, W. We have recently seen some excellent enamels by this firm, who apply them to making charming designs in gold and silver, suitable for Christmas and New Year presents.

THE Winter Season Price List, published by William Tylar, 41 High-street, Aston, Birmingham, contains a large assortment of things useful at this time of year. Some of them we have mentioned in these columns, but our readers can secure the list by sending a halfpenny stamp to the publisher, or mentioning *The Photogram*.

THE European Blair Camera Co., Ltd., inform us that they are still supplying, and shall continue to supply, the "Bullseye" cameras and cartridges.

The word "Bullseye," as applied to cameras, is copyright by this firm, and no camera save those made by them can be sold in Great Britain under that name.

AN improved stand has been fitted to the "Sun" electric lamp, and parabolic reflector made by the Nalder and Harrison Construction Syndicate, Trafalgar Works, Bow Common-lane, E. The reflector is portable, and may be closed into the size of a carriage umbrella, while the new stand, with its large indiarubber-covered wheels, is a great improvement from a photographer's standpoint.

THE "Members' Novelty Class," at the Hackney Exhibition, promises to provide apparatus manufacturers with a number of useful suggestions. It was a distinctly interesting feature this year, and the Hackney Society might with advantage consider the possibility of making it an "open" class. The Hackney Exhibition is already the best "trade" show, and who knows but it may become, for photographers, what the Stanley show is to the cyclists—the recognised means of introducing novelties in manufacture.

COLE'S Flexible Front Camera is undoubtedly one of the best things we have ever seen in camera improvements. It consists essentially of a flexible wooden roller lens board, worked by a rack and pinion, which enables the photographer to use his lens to its utmost capacity in confined situations, and renders unnecessary (save in most exceptional circumstances) the use of the swing back. The inventor has left a camera in *The Photogram* reading-room, where it will remain on view until the end of January. The half-plate camera is provided, wherever possible, with aluminium fittings.

AN UNUSUALLY well-equipped studio and workrooms for enlarging and finishing in bromide, carbon, and platinotype, are those of Bender & Co., George-street, Croydon. The firm is probably the only one in England that does a regular and considerable business with continental countries in photographic enlargements. Through special agents in some of the chief cities of France, Germany, and Belgium, such a trade is conducted; and on the other hand the firm imports direct from the continental manufacturers, a series of special patterns of frames. One of the members of the firm is A. Langfier, to whose very fine air-brush work we have more than once referred, and as a natural consequence, air-brush work is a distinct speciality.

SEVERAL novelties have been sent by W. Tylar, of 41 High-street, Aston, Birmingham. His "New Permanent Title Ink" is a liquid silver that flows readily from the pen and looks well on dark mounts; it is useful for writing New Year greetings. The cabinet border negatives are prepared for the same purpose, and are excellent designs on celluloid. The binding strips made by Mr. Tylar, and facetiously named by him "Profanity savers," are about the best we have used as regards their sticking qualities and their readiness to remain where they are put instead of cockling and curling in the way usual with paper strips. Mr. Tylar also sends out a set of three slides representing "The First Pipe." These are well printed, but the backgrounds are somewhat crudely photographic.

THE Lantern Microscope just introduced by Hy. Wallwork and Co., Charter-street, Manchester, is a most ingenious piece of mechanism, arranged to carry three different magnifying powers with their condensers in such a way as to be instantly changed as desired, without altering the focus. Another distinct advance is that the microscopic slides are not in any way within the influence of heat from the lantern; it is even possible to show pond life. When fixed upon the special stand designed for its use, it is remarkably compact and of elegant appearance; the gas cylinders are placed beneath it in the most convenient position possible, while the table-top supporting the lantern may be readily raised or lowered. The lantern itself may be tilted forward or backward as desired, and a front shelf affords convenient accommodation for the slides. It is beautifully finished throughout, and just the thing for school boards and scientific societies.

THE "Beaufort Light," of which an illustration will be found in our advertisement pages this month, consists of a cluster of nine Welsbach Incandescent Gas Burners. The

jets are arranged under an umbrella-shaped reflector, lined with asbestos cardboard, and fitted on Best & Lloyd's well-known patent "Surprise" Pendant, which enables the operator to move the light about in every direction. The whole arrangement is made to hang from the ceiling, and is supplied with a portable stand for the purpose of photography at balls and private houses, or where it is not possible to otherwise suspend the arrangement. The exposure with a special rapid plate and cabinet portrait lens (largest diaphragm) varies from two to six seconds according to the subject and the lighting. The cost of gas per hour burnt at full, is about three halfpence. The light may be seen in operation any evening, by appointment, at Mr. Beaufort's Studio, 25 Colmore Row, Birmingham.

THE PROSSER ROBERTS CO., of Camberwell, has commenced the manufacture, in addition to the sale, of photographic sundries. Amongst other things they have a plate backing material that answers wonderfully well. It is in sheets like thick sticking-plaster, can be easily squeezed on to the plate, and easily and quickly stripped off. It keeps almost indefinitely, and admirably prevents halation. Another useful line is a galvanized iron wire draining rack for two dozen plates, that is much more workmanlike than the generality of draining arrangements. It is just the thing for anyone who is not absolutely cramped for space.

CHLORIDE Lantern and Transparency Plates have been introduced by the Ed. Beerncart's Dry Plate Co., through Oscar Schölzig, 9 New Broad-street, E.C. On account of their agreeable warm tones, easily obtainable without the trouble of toning, they should find favor. Besides the dozen plates, each box contains twelve pieces of magnesium wire (for exposure) and twelve masks and binding strips for making slides. A further novelty worthy of notice is the Beerncart Chloride Printing-out, or "Insensitive" Plate (Series E), which requires printing under the negative for from ten to fifteen minutes in direct sunlight, and, without any subsequent treatment whatever, yields a finished transparency or lantern slide. No developing, washing, or fixing is needed. The printed transparency can be used in the lantern as it comes from the printing frame. For the purpose of getting a specimen transparency or lantern slide quickly, this plate is invaluable. It can, of course, be fixed and made unalterable, even in the strongest light. Fixing does not reduce the density of the image. Mr. Schölzig informs us that not only are the different kinds and rapidities of Beerncart's plates all one price, but they have adopted a system of calculating the prices strictly on the basis of the surface coated, only taking into consideration the extra cost of the very thin glass used for the smallest sizes, and of the special thick glass necessary for the extra large plates. The basis price is 10s. per square meter, or 100s. per dozen square yards. Thus the large size plates come remarkably cheap. The Beerncart Co. have put up thirty new machines for the production of their plates, films, and papers of all kinds, and claim to possess the only factory in the world capable of evenly and cleanly coating plates of any size, up to the largest sheets of glass that can be manufactured.

Some Charming Xmas Cards are published by C. W. Faulkner & Co., 41 Jewin Street, E.C. They include a great variety of reproductions from photograms, executed in the best style of photogravure and collotype, and mounted on dainty mounts that are bound to appeal to the public. It is almost incredible that such perfect little pictures, finished in such good taste, could be retailed at such low prices, which range from twopence to one shilling.

The "Unique" Christmas Cards, sent to us by the publishers, Hill & Co., Fore Street, E.C., are excellent examples of photography. Two portfolios of imitation leather, each contain six photogravures by A. Horsley Hinton; other specimens are enclosed in neatly embossed folding cards, of which the fronts are cunningly perforated in order to show a portion of the photogram contained within. They are charming little souvenirs and deserve wide popularity; and, best of all, they are produced entirely in England by English hands.



Be Brief!—We reserve the right of condensing all correspondence, but undertake to leave the meaning intact. Personalities barred. Whenever a man is attacked by name, we wait until a proof can be sent, and the attack and reply published together.

Anonymous letters are strongly objected to, and those which are not accompanied by name and address of writer, for our own information, go into the W.P.B.

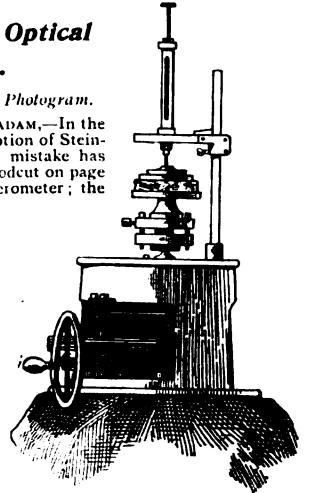
Continental Optical Work.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—In the printing of my description of Steinheil's works, a small mistake has been made. The woodcut on page 273 represents a Spherometer; the illustration of the Automatic polishing machine has been left out. Will you kindly insert the latter in your next issue?

Thanking you in advance, I am, yours faithfully,
J. H. AGAR BAUGH.
Dec. 2, 1895.

[We regret the error, and insert the illustration of the Automatic polishing machine herewith, as requested—EDS.]



The "Down Grade."

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—A slight error has crept into your notice on page 283. My opinion really is that the indiscriminate reproduction of photograms—good, bad, and indifferent—in papers of the *American Police Gazette* type, will so sicken the public that a revolt against such illustrations will be the result, and that no paper of any standing will publish such subjects.

I am far from thinking that half-tone "has seen its best days;" but the recent trash reproduced by half-tone, and published, undoubtedly has.

I feel sure a desire for higher ideals in reproduction by photographic processes will cause this rubbish to be severely boycotted, and deservedly so.

I should be glad if you could, in your next number, make my views a little more explicit to your readers, as I do not wish to cause any misunderstanding.—Yours faithfully,

CARL HENTSCHEL.

[Several interesting letters re "Black Bands," as well as all "Answers to Correspondents," are unavoidably held over.—EDS.]

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Specimen of Heliochrome Printing (3-colour Process).





"VANITY FAIR."

(Royal Academy, 1865.)

PRINTED WITH

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SUPPLEMENT TO "THE PHOTOGRAM."

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PORTRAIT OF A LADY.

BY H. H. HAY CAMERON.



BROMPTON ROAD—LATE AFTERNOON.

By EUSTACE CALLAND.

THE PHOTOGRAM

VOL. III.

FEBRUARY, 1896.

No. 26.

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Cast Iron Laws.

CONTINUING our consideration of the Photographic Copyright Union, decidedly the most important photographers' organization at the present time, we must carefully note Rule XXIII., the pivot of the whole. It reads:—

XXIII.—That no Member shall allow a Copyright picture belonging to him to be reproduced (whether registered or not) for a less fee than 10/6 on each occasion, and for each different publication or form in which it is used, but he shall be at liberty to charge a larger fee according to his own ideas as to its value.

In principle an excellent rule, with which we are in full agreement. But in ordinary life it is said that "the exception proves the rule"; while in the P.C.U., we are told, on the authority of the president, vice-president, and some others, expressed in public meeting, that

there can be *absolutely no exception*. A member can not give away the right of reproduction under any circumstances; and this arbitrary inflexibility seems to us the one weak point in an excellent organisation. It prevents the adhesion of many who would otherwise join the Union; and members admit they have been bound to break the rule in certain exceptional cases. One of them, Count Ostrorog (Walery), strongly raised this point at the recent 'general meeting, but discussion was not taken. He mentioned two cases; the use of one's own portrait to illustrate an interview or article having a certain advertisement value; and the use of the portrait of a minister, clergyman, or similar local celebrity, to illustrate a Parish Magazine or similar publication, upon which no profit is made. The feeling of the members of the council was evidently strongly in favor of the rule, the whole rule, and nothing but the rule.

The Photographic News very pertinently points out that the rules are quite unacceptable to a large and growing number of journalist-photographers, whose support, could their requirements be considered by the Union, would be of the greatest value. Their competition is practically the only danger the Union has to fear. Another worker, absolutely barred by an arbitrary reading of the rule, is the photographer who illustrates books. He may, and often does, receive a fee considerably higher than the minimum half-guinea, but it would be folly for him to attempt to demand a further fee when duplicates of his illustrations are used in a review of the book. To

insist on the fee would be to lose a publicity which is infinitely more valuable, and the loss of which would be but poorly compensated even by the advantages of membership in the Union.

We would even mention, with all due deference and diffidence, that there *are* arguments in favor of a co-operation, in certain circumstances, between photographers and the journals specially devoted to their own craft. In making such exception, even if it were general, photographers would but follow an unwritten law which, we believe is universal in craft-journalism, that the work of the craft is supplied to the journals of the craft without fee, except where specially prepared for the use of the journal, or entailing special outlay.

We do not press this last point, though consideration of the time and money freely spent by ourselves and our proprietors in what we believe to be the interests of the craft, would surely absolve us from any charge of special pleading based on the paltry amount of fees that we are in any case called upon to pay. But we do wish to press upon the Union the conviction, which we hold very strongly, that too much rigidity is a danger to the Union: an occasional nuisance to members, and a bar to the admission of certain increasingly influential sections of camera-workers.

Misapplied Photograms.

BY GLEESON WHITE.

AT a congress lately a most thoughtful paper was read by an amateur photographer whose theoretical views are no less happy than his practical manipulation of the camera. In it he raised the whole question of "decorative" as opposed to "naturalistic" art. Perhaps no question has been fought, or is still being fought, more keenly in all branches of the arts and literature than this question of Realism *versus* Romance. Nor is it easy to define the two opposing styles. Not merely do they overlap and blend into each other so that the most honest champion hesitates at times to claim the result; but the phrases used to express the opinions have got hopelessly mixed. By careless use of terms, and the deliberate employment of technical expressions belonging to the enemy, as for instance: "the pattern of a landscape," and the use of the word "decorative" to describe pictures stuck on to inappropriate objects, each side has succeeded in confusing the issues.

If, however, we put the case as that of "conventional ornament" against the imitation of natural objects, we clear the ground of many possible misconceptions. First, however, we must realise what conventional ornament means. We all know the so-called Greek honeysuckle pattern, and, despite the name, we have often doubted whether the original Greek who invented the pattern, that has been repeated often enough to go round the world a hundred times, had the least idea that he was paraphrasing the form of the flower in question. More probably it grew from one of the many ornamental patterns (based obviously enough upon the lotus) which were the stock-in-trade of the Egyptian decorator.

Why, it may be asked, should ornamentation that is as unlike nature as possible, be in any way preferable to an exact imitation of nature? Why,

for instance to keep to the same example, is a frieze of the Greek honeysuckle more seemly as decoration than an imitative carved wreath of the flower itself? Probably the most plausible reason may be found if we consider all ornament as belonging to architecture. Now architecture is concerned chiefly with proportion, symmetry, and repetition, and you cannot introduce the unsymmetrical fantasy of nature without a sense of discordance. Nature rarely or never is symmetrical in the mass, a leaf may truly show a balance of its parts, the one half repeating the other in reverse; a flower, or an animal is nearly always symmetrical—but the compositions of nature, whether in landscapes or groups of leaves which we call trees, rivers, lakes, or clouds, whatever form we choose, we shall find it ignores this balanced repeat which is so constantly present in the details of the compositions, but never in the composite mass. For when nature repeats in facsimile (or sufficiently nearly so for argument's sake) it is merely the flower, the leaf, the feather, or the fur; never the complete item, be it plant, animal, or human being.

To leave theory and come away to everyday facts, we must needs take all human decoration, whether buildings, pictures, or flat ornaments, as compositions, for in these it is obvious that some items have been selected and others rejected. A space has been cut off to be decorated, and certain patterns chosen to fill it. If you have a square panel in a building, or upon a piece of furniture, the habit of most civilised nations is to fill it with evenly balanced ornament. True, that this balance does not always consist of a literal imitation that has the one half precisely the same as the other, but reversed. There is the irregular balance of the Gothic and Japanese art to take into account. Now the photogram, unless you

make an arbitrary group of details (unnatural in its symmetrical distribution), gives you the composition of nature which is not regular and symmetrical, in place of the pattern evolved by human intelligence which is (as a rule) perfectly balanced. Hence the photogram at once upsets our preconceived sense of fitness, yields a "picture" not a "pattern." True it is these pictures have often been employed for panel decorations, and there we seem to be confronted with a new difficulty. But here again a reference to architectural usage helps to explain the case. A picture that is intended to be an integral part of the decoration of a building is treated in quite an artificial manner. Its *chiaroscuro* is almost ignored, nor is any effort made to deceive the eye by a deliberate imitation of nature carried to the extreme of realistic effect. Its perspective is merely suggested, its component parts are distributed in a fashion that shows a geometrical foundation. Thus a favorite grouping with the old masters was based on the form of a pyramid. You may find hundreds of frescoes and other mural paintings, where the figures are thus grouped. Such a painting may fulfil all the purposes of true decoration, and yet have much that recalls nature. If, however, you take a landscape by Constable, it may be superbly decorative in itself, but as a panel of the building it becomes a mere shapeless conglomeration of unlovely masses. When you forget the building and look through the frame into simulated nature it is beautiful enough; but if you regard the panel of the picture as a portion of the building, then it has only the decorative effect of a few chance daubs of pigment smeared over a flat surface.

If this argument, put far too briefly to escape weak points at every stage, is accepted for a moment, we shall find that a photogram, or a picture by Constable is a thing complete in itself, and therefore not adapted for use as a detail in an artificial arrangement where regular order rules, and so infinitely less adapted to be repeated side by side as a frieze, or in an "all-over" pattern.

To come still farther towards practical examples. In the Imperial Institute one saw lately a tea set, where each piece of china bore a photogram as decoration. Now each photogram may have been a most exquisite picture, and the texture of these ceramic pictures has many fascinating qualities of its own, but the "decorative" effect was merely that of red patches of no particular shape on the sides of each teacup.

If you study the best examples of the pottery of the world, in the vases of Greece, Oriental china, or anything except the debased art of the Sevres and Dresden factories, or of an equally degraded period of British design, you will see that pictures applied in this way, as vignettes, were never considered to be good decoration. True, that conventional presentations of animal and floral forms have constantly been used, but always merely suggestive of the real thing, not literal imitations of nature, with all her accidents of light and shade, her superabundance of petty detail and her unsymmetrical composition. If the bull may be permitted, since the very essence of the word composition suggests a deliberate ordering of heterogeneous details into a consistent shape.

All this rambling argument, you may say, merely

to protest against a photogram on a teacup. But it is not merely the use of a photogram on a teacup, but the whole misapplication of pictures where artificial objects call for patterns. A cup is a symmetrical object, whatever is added to it should follow its main lines, and obey the same principles of regularity. The ornament may be as florid or as simple as you like; it may even comprise panels, in which pictures may be placed as a sort of compromise (although strictly speaking I would even refuse this concession), but a vignette stuck upon a cup is not decoration. You may say you like it. If so, it is an Englishman's privilege to obey his own taste, and no one would wish to upbraid him for so doing. If, however, he pretends that his taste represents a consistent experiment in decoration, then those who have studied the principles and practice of art must protest, and do so with no equivocation. Such beauty as the teacup possessed before is ruined by addition of the photogram, and I do not think the real beauty of the photogram (supposing it to be a good one) is improved by being exhibited on the convex surface of a cup instead of upon a flat surface of paper, china, or glass, duly mounted and ranked as a picture to be examined closely for its own good qualities.

One who believes the photogram has a most valuable service to offer to art, must needs protest against such a wilful infringement of the first principles of decorative art. A shape conceived by human intelligence, perfected by centuries of experienced skill, even if it be so lowly a thing as a teacup should not be spoiled by the application of matter in the wrong place. A Whistler etching, a study by Michael Angelo, a portrait by Rembrandt, would be equally out of place. And as they would not only spoil the teacup, but also be in turn ruined by their grotesque environment, so I think, as one who would uphold the dignity of the photogram, that it is only right to protest against its degradation in similar cases.

Imagine a wall paper repeating the same photogram, however exquisite, or a curtain so ornamented, and you will find the repetition would be intolerable; and a little thought should convince any unprejudiced person that a single instance of its misapplied use may be equally unsatisfactory. On my walls I have several photograms hung amid masterpieces by Dürer, Whistler and other great artists; but on a teacup, better the most clumsy patterns of Dutch craftsmen, or even the tame and tasteless little ornaments of the commonplace china merchant than the most consummately perfect photogram.

This may be thought a storm in a teacup, but if the storm is caused by the admixture of a poisonous acid into the harmless beverage, we do not swallow it save under compulsion. So those who will not swallow a tempest of that sort in the teacup, will not accept the blemish on the outside, no matter how loyalty, courtesy, or a desire to say smooth things, induces them to be silent in the matter.

For it is not a misdecorated teacup, or a photogram on a coal scuttle, or a tea tray, I would protest against particularly—painted pictures would be equally unseemly in such places—but the whole question of pattern *versus* picture that is raised, and all inadequately considered here.

Alcohol :

For Locally Reducing Density.

UNTIL a few months ago I supposed that every practical picture-maker was well acquainted with the use of alcohol for "rubbing down"; but recent talks, with such representative men as many of the exhibitors at Pall Mall and the Salon, show that comparatively few know of the method, and still fewer use it. I will first describe the manner of working (which is perfectly simple), then look at its advantages over other methods of reduction, and close with a few hints as to cases in which it will prove invaluable.

Upon an absolutely flat surface (plate glass, for instance), lay two or three thicknesses of blotting paper, and upon them the negative to be locally reduced, film side upward. The negative must be *absolutely dry*. Take a hard but perfectly smooth piece of rag, fine linen, a pocket-handkerchief, or what not, or, better still, a piece of smooth chamois leather. Take also some alcohol (either pure or methylated), as free from water as possible. With the rag or leather drawn tight over the finger-tips and wetted with the alcohol, rub vigorously upon the part of the negative to be reduced. Don't be afraid of pressing firmly or rubbing hard, for you will often need to rub until the negative fairly screams with the friction. So far as I know, the alcohol has no part in removing the silver deposit, but merely hardens the film to enable it to stand the rubbing. Wetting with alcohol does not soften the gelatine like wetting with water, but

hardens it. The work is so simple that I only know two ways in which a beginner can go wrong, after once overcoming the fear which prevents this rubbing vigorously. They both arise from excess of zeal, and are:—

1. Patchy work, due to attempting to confine the rubbing to the dense part, and
2. Glass-breaking, from having too soft a bed.

If several thicknesses of blotting paper are used, especially with large negatives, pressure on the centre is almost sure to result in a smash.

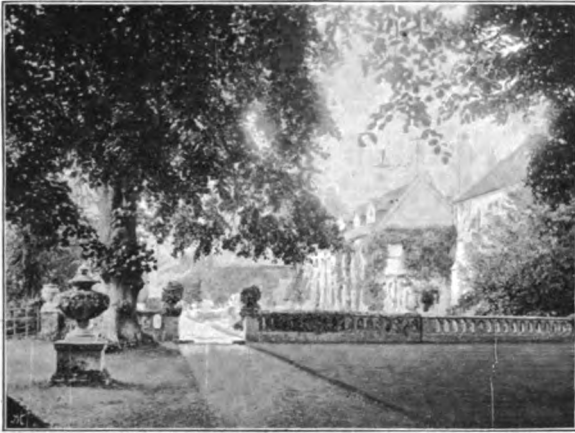
The attempt to follow the outlines of the part to be reduced is quite unnecessary, for the great beauty of this mechanical reduction is that it works automatically, reducing the densest part first, and not touching the half-tones until the high-lights have been entirely removed. This is due to the fact that the silver in the half-tones and shadows of the negative is well protected with gelatine, and these parts are thinner than the high-lights. The high-lights, and especially halated parts, where reduction of the silver is complete, stand up in relief above the surrounding gelatine, and are full of silver. Hence, if one rubs vigorously and confidently all over and slightly round the too dense part, the reduction looks after itself.

The disadvantage of this method as compared with chemical reduction, is its slowness; but it has distinct advantages that make me think it is *the* process for every man who prefers perfection to quantity of work. The discriminative action



DINING HALL AT CLOPTON HOUSE.

just mentioned is its immense advantage, for while the alcohol brings down halation and high-lights without touching the shadows, chemical reduction attacks the whole of the portion to which it is applied. Another great advantage of the alcohol method is that at any stage of the process a print can be made, without any drying of the negative,



BEFORE.

so that the reduction can be taken gradually and the effect seen at every step.

Of the pictures hung at Pall Mall this year, fully twenty-five per cent. would have been improved, both technically and artistically, by alcoholic reduction of some part of the negative; and at the Salon were other examples. At every lantern exhibition I see many slides that would be improved by the use of the process on themselves as well as on the negatives from which they were made.

Of course, interiors, where there is immense contrast between the highest lights and deepest shadows, offer the greatest field for local reduction, and I often deliberately over-expose the high-lights to a ruinous extent, knowing that alcohol will pull the thing together. The first illustration, the dining-hall at Clopton House, is an excellent example of a subject that lends itself to this work, though the negative as originally made would not be called a bad one. Two of the windows have lost the detail of their design by halation. The top of the octagonal table, and the sides and backs of the leather-covered chairs, which reflect the light, need reduction. The detail of the right-hand side of the fireplace, the roundness of the gas globe near the centre, and the details of the fine collection of "Toby" jugs, of which Sir Arthur Hodgson is justly proud, are all lost by the long exposure necessary to get any detail at all into the old black oak. The carpet, too, especially

on the left, near the main source of light, is far too light in color to be truthful, and all these items can be reduced by alcohol without touching the shadows. I intended to use this as an example of "before" and "after," but my assistant, over-careful, and using a thick, soft, pad, smashed the negative. The great mass of halation given by a brightly-lighted window can usually be removed entirely, and in very many old interiors a piece of stone or distempered wall, or a fine chimney-piece that catches the light from a window outside the field of the picture, will be immensely improved by rubbing.

In landscape work there are ample opportunities. I give one pair of examples, "before" and "after." They speak for themselves. In very many cases, blank skies have a little delicate cloud-work lost in a mass of silver deposit, but easily recoverable by simply rubbing, either all over the sky, or in the district where the clouds appear. Often, too, the patchiness of the trees and bushes in the foreground, caused by reflection from a few of the leaves, and very irritating to the eye, can be thus removed. Many otherwise excellent pictures can be improved by very little work. For instance, if the artist will pardon my mentioning it, the birds' nest, by C. Kearton, on page 101 of *Photograms of '95*, would be improved artistically by reducing the brilliancy of the broad flag-leaves bent over the nest. The leaves would show texture and indicate their real color, and the



AFTER.

eggs would become the true central point of the picture by their (then) lighter color than their surroundings. Many a spotted foreground, especially in seascapes, wants an alcoholic rub to lessen its irritant insistence; and I believe it is a fact that some of the delicate blending in Horsley Hinton's two chief Salon pictures was due to this treatment.

In portrait work, alcohol and the finger-tip will generally do infinitely better work than the recently introduced retoucher's knife. Many a shiny forehead, and hard, chalky cheek, has plenty of delicate detail overlaid by a heavy deposit that can be easily removed.

In machinery, where it has been impossible to grease-paint the bright parts, there is a legitimate and profitable field for the method,—and I might ramble on endlessly, but will content myself with one other suggestion.

Lantern slides very often have a bit of dense heavy shadow that is a great eye-sore, while the

rest of the slide will not stand reduction. Here is another case for treatment, for the method that reduces the high-light deposit in the negative, can be equally well applied to the dark shadow in the positive.

In conclusion, it is said that "the eye sees what it seeks." If you look at your own work you will probably find many negatives requiring an alcoholic rub. If so, start on one or two of the least valuable, and when you have gained confidence, you will thank me for inducing you to try a simple but invaluable process.

A. McC.

The Kinematograph.

Abridged from the *Bulletin du Photo Club de Paris*, by CATHERINE WEED WARD.

THE problem which Messrs. A. & L. Lumière have solved by their invention is this: To take a number of views of an animated scene at very close intervals, to make positives from these negatives, and project these last on a screen so as to have the images follow each other exactly at the same place, and with intervals of time corresponding

to those between the exposures. The length of exposure of each negative is about one-fiftieth of a second, of each positive one-fifteenth of a second; the number of impressions is about 900 per minute.

The Kinetoscope of Edison shows to a single spectator at a time a series of impressions following each other at short intervals. Small moving

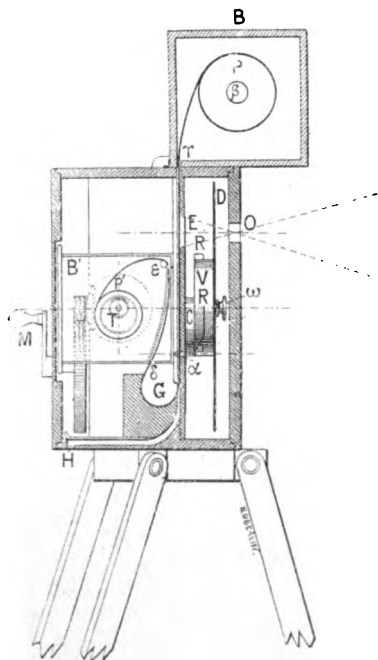


FIG. 1. LONGITUDINAL SECTION OF THE KINEMATOGRAPH.

P, band of film unrolling; B, small box placed on the Kinematograph; B, iron shank sustaining the band of film; T, opening for the film; G, orifice guide for the film; E, shank guide for same; T, shank on which the film rolls up; M, motor crank; R, rotating arbor; C, eccentric triangle; V, drum; D, double disk; E, O, openings serving as a passage for the luminous rays; d, tooth of movable framework; E, opening for the passage of the film before rolling up; B, box in which the film is to be rolled up; R, R, ramps carried on the drum V; H, opening for the passage of the negative film at the time of the printing of the positive. The apparatus stands on any kind of tripod.

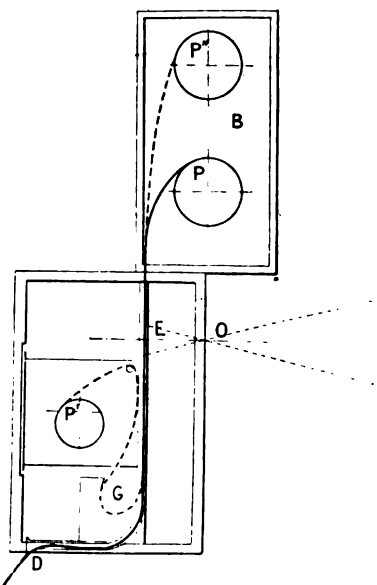


FIG. 2.—ARRANGEMENT FOR PRINTING THE POSITIVES.

P', positive film; P, negative film; B, box containing the positive and negative films before unrolling; E, opening before which pass the different portions of the sensitive film, and where they are submitted to the action of the luminous rays; O, opening made in the box containing the Kinematograph; G, orifice guide for the positive film; P, positive film after its rolling up; D, opening by which the negative film passes out.

objects are seen, lasting about half a minute. The band of film on which the pictures are taken, having a continuous movement, each one, to give a clear impression, should be seen for only a very short time—about $\frac{7}{10000}$ of a second. The illumination is extremely weak, a well-lighted

object is required, the scenes have little perspective, and unroll before a black background. It needs at least thirty impressions per second to make a continued impression on the retina.

The Kinematograph reduces the number of impressions to fifteen per second, a large audience seeing on the screen scenes lasting nearly a minute; the perspective is not limited, and movements are represented truthfully. The band of film is fifteen metres or more long, and about three centimetres wide. The two sides are pierced by equi-distant holes corresponding to each image. The different impressions are positively similar, if any two images are placed one on the other the parts representing immovable objects will coincide; those representing moving ones will have positions whose difference represents the movement accomplished between the instants when the two impressions are made. The band P rolled on itself (fig. 1 and 2), enclosed in a box B, placed on the kinematograph, is held by a metal shank. It passes out by the opening Y, descends vertically, passes around a roller G, ascends, moves over the shank E, and rolls about the third shank T. Movement is obtained by the crank M, which controls a drum *w*, and on this are fixed a system of returns operating the shank T, a peculiar triangle C, a roller wheel V, and a double disk Dd. This last begins to pass before the opening E, just as the film begins to descend, in such a manner that E is at certain fixed periods darkened, and at others left free. By reason of the persistence of the luminous impressions on the retina, the eye does not perceive the dark spaces

separating the impressions, and the result is a vividly real image, which seems as if actually moving. In the article from which this account is obtained, full explanations of the apparatus are given, but it is sufficient for us to note only two or three special points. Film is used for both negatives and positives, and all the various parts of the instrument are ingeniously and accurately regulated. We give two illustrations to show the delicate mechanism, and in figure 1 is seen the box containing the roll of film, P being the negative band, and P* the band on which the positive impressions are made. The speed of the various movements in the pictures can be controlled by the operator. The instrument was shown in Paris last July, at the *Revue Générale des Sciences*, electricity and the Malteni lantern being used. The screen, at five metres distance, was of transparent linen, placed in the doorway between two rooms, one audience looking on the screen, the other through it. The exhibition, as described, must have been a brilliant success. Among the pictures shewn were the burning of a house, from the instant it caught fire to the extinction of the flames; the movements in a blacksmith's forge, even to the gradual reddening of the iron and the flying sparks, then the clouds of steam when it was plunged in water. Street scenes and other subjects were also shewn, and Messrs. Lumière were warmly commended for their labors, so successfully accomplished. It is to be hoped the Kinematograph will soon be shewn before the London Photographic Societies.

In Colors of Nature.

DR. JOLY'S PROCESS.

SEVERAL enquiries, relative to Dr. Joly's process of producing photograms in the colors of nature, have been received by us since our notice of the sale of American rights. We wrote to Dr. Joly on the

The accompanying illustrations are as truthful a rendering of the originals as it is possible to prepare by wood-engraving, which method we were obliged to adopt, as it was impossible to correctly reproduce them in half-tone.



FIG. 1.

subject, and he kindly submitted a negative taken through his screen, and a positive therefrom ready for examination in contact with it.



FIG. 2.

Dr. Joly's method is extremely simple, though rather difficult to understand when stated with scientific exactness; but if given in rough out-

line is not so difficult. Let us assume for this purpose that the primary colors are red, yellow and blue. A piece of glass ruled in parallel lines, —red, yellow and blue alternately; the lines being extremely fine, and composed of transparent material, is interposed immediately in front of the plate when making a negative. Suppose the original subject contains patches of red, yellow, blue, black, and white. The red rays will pass through the red transparent line and act upon the silver immediately behind it; but the blue and red lines, allowing no red to pass, will preserve the plate from light action. The blue rays will penetrate the blue lines, and attack the silver behind those lines, and the yellow rays will pass through the yellow lines. The white part of the subject, reflecting light which contains red, yellow, and blue rays, will secure action under all three sets of lines. The black, on the other hand, reflects no light to affect the silver.

The negative made under such circumstances will appear similar to fig. 1; the whites represented by solid blackness, the blacks by solid light (or solid transparency) and the colors by deposits of varying density under their proper lines.

From this negative a transparent positive (fig. 2) is made; and in order to see this in its natural colors it is only necessary to place behind it a color-screen, such as was used in making the original negative. It is, of course, necessary that the lines that were under the original red shall now come under the red again, and so on. Where there is clear glass, light will shine through the red, yellow, and blue lines equally. The parts of the picture that represented pure red, will have transparency under the red lines, but a dense deposit under the blue and yellow. Pure strong secondary colors will be represented by transparency under both their primaries; and impure colors will be represented by greater or lesser opacity, according to the amount of red, yellow, and blue that they reflected, to affect the plate.

This method can only be used for transparencies (including lantern slides), and the success of the result largely depends upon the fineness of the screen, which must be so close-ruled that when looking at a picture at the ordinary distance—or thrown on the lantern screen—the texture of the ruling is invisible. In such case, the transparent parts that allow the red, yellow, and blue lines to be seen equally, do not appear as colored, but as white, from the blending of the three effects.

This explanation should give a full working idea of the method, if pondered awhile in connection with the diagrams. Of course the results are only approximately true, though they are much better than one might expect, on consideration of the difficulties. To give perfect results it would be necessary to have plates sensitive to all parts of the spectrum, in exact proportion to the visual intensity of the rays. It would also be necessary to have ruled screens with the colored lines absolutely touching each other—no clear glass at all between them—and with the colored lines so perfect in their color-value and density that each would absolutely block out all rays that could be transmitted by the other two. At present none of these conditions are possible, though the first one may have been largely met by Cadett and Neall's introduction of the spectrum plate, which seems to be an invaluable aid to this particular class of work.

Great practical difficulties stand in the way of the general adoption of the process. Many seemed insuperable, and a few of them still appear so. But Dr. Joly has mastered some of the difficulties, and believes that all can be overcome. During the last two years he has been steadily improving the details of the process, and he hopes before very long to have lantern slides and other transparencies transmitting the colors of nature producible at but little greater cost than ordinary transparencies. An effective example was shewn in the lantern at the last Convention.

Printing in Platinum.

By "E. A. R."

In my last article I brought the platinum process up to the point at which the paper has been dried and stored for use; I now propose to continue the operations to the finished print.

From the manufacture of the paper until the print is developed it must be rigorously protected from damp air or moisture of any kind whatever. For this purpose the paper is stored in tins having lids at both ends, one to contain the moisture-absorbing substance, which is contained in the lid and prevented from falling into the tin by a grating placed across the inside. The absorbent substance is, most conveniently, short fibred asbestos, soaked in a very strong solution of calcium chloride, made into small nodules, and dried over a fire, on a metal plate. This is wrapped in fine muslin and placed between grating and lid of tin, the joint of which is covered by a broad indiarubber band; a band is also placed over the joint of the other lid.

The calcium chloride and asbestos can, when it has become moderately wet from absorbing

moisture from the air of the tin, be dried over a fire, on a metal plate, and replaced, great care being taken to prevent any small particles from falling among the paper and causing white spots; this is the function of the muslin.

I have dwelt at rather a great length on above, but it being so important I hope I may be excused. The paper, on being cut up for use, should be curled so that the sensitised side is outermost; it will then, after a time, retain this curvature, rendering it more convenient to handle.

The printing is done in the usual way. The special precautions to be taken are—that the pads at back of frame are perfectly dry, and that a sheet of vulcanised indiarubber be placed directly behind the paper. If the rubber is new it should be well washed to remove the free sulphur, which is generally found on the surface; this remark applies more to the white varieties. The "filling-in" should be done in a light yellow light (gas-light), as platinotype paper is very sensitive to light, far more than ordinary silver paper.

The finest results are produced from negatives

of good density and gradation, clean and free from stain or fog; but by careful development a fairly good print can be obtained from an indifferent negative.

The printing is continued until the details just begin to show in the high lights, the image being generally faint, and, compared with the rest of the surface, of a violet hue. The print shows up more in damp weather, and, therefore, printing must apparently be taken deeper. In negatives having very great contrasts, the clear glass of negative, corresponding to the shadows of print, allows a large amount of light to pass, and over-exposes the paper beneath, producing reversal, or, as it is generally known, "solarisation"; this produces a granularity in the blacks, and is of an orange colour in the undeveloped print. The printing can be done by the actinometer, platinotype paper taking about one-third the exposure of ordinary silver paper. The prints should be examined quickly, to prevent fogging of paper and the absorption of moisture.

When printed, the prints are returned to a tin, like that used for storing the unexposed paper, the same precautions being observed as to moisture, being curled face outwards, the long way of the print.

The prints are developed on a bath composed of neutral potassium oxalate, of the following strength:—

Oxalate of potassium .. 16 ozs.
Water 60 "

This may be used for the paper coated as directed in my last article, but the Platinotype Co. supply special developing salts, for which special properties are claimed.

The above solution is used at a temperature not below 70° F. Should a print be slightly under-exposed, it may be improved by heating developer; hard negatives require a hotter, and weak a colder, solution. Development should take place in a subdued light or gaslight. The solution is most conveniently contained in an enamelled iron dish, about 15 in. x 12 in., and 2½ in. deep, for 12 x 10 prints, care being taken no iron is exposed, this being detrimental to prints. A thermometer should be kept in the bath, and the whole placed on a small gas stove.

The prints are either floated on the surface or immersed in the solution; if floated, the print is taken face downwards between the finger and thumb of each hand—being sure the fingers are

quite dry—the right hand end lowered on solution and the print drawn across, gradually lowering print with left hand. The print should then be raised to ascertain if free from air bubbles on the surface, if not they can be displaced by rapidly drawing print over surface of liquid; if they are not removed the spots occupied by them will be left white. The print is then placed in a bath made as follows:—Fixing bath—

Hydrochloric acid .. 1 oz.
Water 60 ozs.

They are left in this for about fifteen minutes, and then transferred to another like bath for same time, and again into another; the last bath may be used again for the first bath of the next batch. The prints are then washed in three changes of water, extending over about half-an-hour, according to number of prints, and then dried in the usual way. They may be mounted with cornflour paste, made of a teaspoon of cornflour to the teacup of water, boiled and allowed to cool, the surface skin being taken off; if required to keep, a little carbolic acid or thymol should be added.

A special paper is supplied for cold development, and also for sepia tones on application of a special solution to the developer, all of which can be obtained commercially. Sepia tones can also be obtained by adding a little bichloride of mercury to the ordinary developer and using the ordinary paper.

The prints appear more brilliant and slightly lighter when wet, and so allowance must be made in developing. The development can be stopped at any instant by placing the print in fixing bath.

The acid must not be allowed to get on the undeveloped prints, or it will then entirely destroy the image, and produce white markings. The developing solution can be used over and over again until it becomes green, and deposits green crystals.

Directly the prints are in the acid bath the operations may take place in full daylight, and the last acid bath should show no color when a depth of two inches be viewed in daylight. If there should be a slight yellow tint, another bath should be given, it being very important that all the iron salt be removed from the paper. For large prints a long trough is used, 26 x 6 x 5 inches; the print is drawn backwards and forwards through this, by pulling it beneath a glass rod immersed in the solution.

Two Gems of '95.

BY FRANK M. SUTCLIFFE.

No easy task to pick out the two best pictures from the *Photograms of '95*. After turning over the leaves for the twentieth time we find that the book somehow or other remains open at page 98. This seemed the most beautiful thing the first time we looked through the leaves, and it still charms us the most. *Why* does this picture fascinate, and *what* makes it so beautiful? The childish eagerness with which we all wanted to know the "why" of everything is with us still, but, unfortunately, many of us who are shut out as it were from all who could answer our questions, now

have to fall back on ourselves for the answers.

What is the first thing that strikes us in Mr. Cameron's Portrait of a Lady? Its perfect harmony, both of tone and pose; there are no startling contrasts which make you jump off your chair—there is gradation everywhere; but the lighter parts, the half-tones and the darker parts, are massed together, and not mixed up into a hash. This spottiness is the principal evil the photographer who would make pictures has to guard against, for our eyes and our brain recoil instinctively from the trouble of understanding so much at a time. Why do Mr. Horsley Clinton's

landscapes seldom fail to please? Simply because he does not hesitate to tone down with an unsparing hand acres of detail, which would otherwise weary the eye, and prevent the spectator from getting the impression the artist wanted to convey.

What is the next thing we notice in this portrait study? That the focus is not sharp anywhere, and our eyes are relieved from the trouble of looking at each individual hair; for it is a trouble, though we may not think so—were it not there would be no need for the short-sighted to knit their brows and crane out their necks to take in this detail. Unfortunately the average sitter likes his photographs as sharp as possible, and any attempt at *thoughtfully* focussed work is met with a clamoring for "clearer" prints. For this reason Mr. Cameron deserves the thanks of all professional photographers for showing a picture without the conventional offensive "clearness." What next do we notice? That the picture is full of the most delicate, charming, and subtle curves. Anyone who has studied ornament knows that perfect harmony of curvature distinguishes good from bad work; bad work being full of jarring notes, which offend the eye as discord offends the ear. In the portrait study we first note the beautiful curve of the neck, emphasised in a most skilful way by being thrown into shadow; then note the line of the top of the head, and the subtle lines which radiate, all curved, from behind the ear—one goes down the back of the neck, another down to where the neck joins the breast, another towards the brow. Then note the shoulder sleeve or wing nearest, how it rises and falls like a wave of the sea; while the other wing, furthest off, is for all the world like a butterfly's. Without this wing the picture would lose much of its charm. Then note, too, how thoughtfully the head has been placed on the plate; no waste space behind the head where it is not wanted, but there is breathing room in front; cut off part of this space and see how much is lost, yet the fashion now seems to be to trim prints into startling rather than satisfying proportions. Then look at the restful expression, how well it agrees with the rest. The mouth is not twitched out and lengthened into a smirk; Mr. Cameron has been fortunate in a sitter who can shut her mouth without an effort. Then the eye has not been turned up to the ceiling, nor rolled out of its corners, as in another example in the book. On page 14 we have a capital foil to this portrait. "Sere and Yellow" we cannot look on without a shudder, while Mr. Cameron's picture will never tire.

For a second example we are bothered to know which is the better of the two—"Evening on the Marshes" or "Brompton Road," and instead of tossing up the fire-shovel to see which to take, we put ourselves through the following catechism:—"Which of the two would you be proudest of having taken?" We answered, "'Evening on the Marshes' would *sell* the best." Then our catechist said, "That is not an answer; which of the two, then, do you consider requires the most skill and artistic perception to render?" "'Brompton Road'" we answer. Here, then, we have a picture which claims our attention for some unseen reason; stay a bit, has it not the same qualities as Mr. Cameron's portrait? Yes,

all the lights are having a game to themselves, and though the half-tones are a good bit deeper, they are all together. Yes, that is it—*breadth*, and not spottiness, the bits of paper on the causeway notwithstanding. Anything else? Yes, sunshine, which we photographers adore, but seldom render truthfully. We remember some two or three years ago pointing out to some other photographers the wonderful effect of sunshine which Mr. Calland had secured in a small picture of a bit of road and apple blossom, but it was late in the year, and my brother photographers, living in smoky London, seemed to have forgotten what sunshine was. If ever they or any other photographer should forget again, they have only to open at page 65 to awaken out of their forgetfulness. Here, again, the professional photographer should thank Mr. Calland for having taken this view. The chances are that if any photographer, bound to the camera for life, *had seen* this view, he might have even got as far as drawing the slide, then with a sigh he would have shut it again and said, "Beautiful, very; but your worship of beauty will lead you into the work-house; who do you think will buy it when you have got it taken?" and he would pick up his camera and go home a wiser and sadder man.

What other points are there in Mr. Calland's picture? Many; note how all the traffic is going sunwards, or, at least, towards the light and heart of the view. Then look at the lamp-post; if it does not show the contrast between sunshine and gaslit darkness, we don't know what could preach a sermon more eloquently. But what is it that makes the picture so very sunshiny? You give it up. It is the contrast between the dark leaves of the three young trees and the highest lights on the buildings in the distance. The dark leaves, covering much of the sky, force the lights upon us; yet these lights are so full of gradation that they come pleasantly, and do not irritate. Imagine the trees away—the eye goes up into the sky and is lost there.

What do these two pictures teach us? That we are satisfied with a very little, but that little must be in its right place. A well-ordered mind, which can appreciate beauty, does not like disorder; a single thing out of place causes us uneasiness—that is why photographs are seldom perfect as pictures. Though there are in the *Photograms of '95* some nineteen others well nigh perfect, everyone must feel that the rest might have been improved by "waiting a bit." Those like the two examples we have chosen emphasise the saying, "Be sure you are right, then go ahead." How are we to know when we are right? If instinct does not tell us, the best way is to study the works of others, seeking first for the good there is in them—the faults will show without being looked for; but these faults should not be overlooked entirely, for they will teach us what to avoid.

The opportunity given to us by the publication of *Photograms of '95* for the study of other people's work, is a thing to be thankful for. At an exhibition we can only walk round—with a headache more or less splitting—when we would seek for instruction; but here we can learn a little whenever we would. Our only regret is that *Photograms of '95*, like strawberries, "comes but once a year."

Photographing Interiors by Flash Light.

BY T. PERCY.

(Concluded from page 16.)

THE flash powder to be used is a mixture of magnesium and potassium perchlorate, prepared as under :—

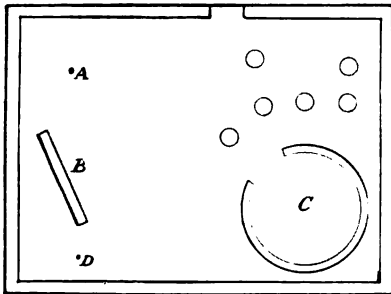
Powdered magnesium, 1 oz., or 2 parts.
Powdered potassium perchlorate, pure,

1½ oz., or 3 parts.

The substances must be quite dry, and intimately mixed. On no account must potassium chlorate be used instead of potassium perchlorate. The quantities are to be carefully weighed out, and should then, *before mixing*, be separately spread upon sheets of clean, dry paper, and exposed to the air in a warm room for a few hours, stirring each frequently to expose a fresh surface. In this way the operator can practically ensure that his ingredients are dry before mixing. Take a clean pint basin and place in it the two substances, and then mix thoroughly by means of a bone or wood paper-knife, or a wooden spoon. To ensure a perfect mixture some little care and patience is required.

When the operator is satisfied that the two bodies are mixed thoroughly, he should divide the whole into ¼ oz. lots, and wrap up each in clean paper and store for future use in a tin box. During the mixing, care should be taken to work away from fire, as an accidental spark would produce a serious disaster.

Now, to use the light, he will require some cotton wadding, a sheet of tin, or an old board, and a long taper. Thick tapers, about eighteen inches long, are readily procurable, and they are the most useful. The cotton wadding (white) may be procured by the yard at any drapers. This must be thoroughly dried before the fire. The wadding has the wooly portion inside, with outer skins, and on pulling these skins apart we get two layers. When the whole is separated the pieces are rolled up and kept ready for use.



The manipulation of the camera does not concern us except that in choosing the position regard must be paid to the place where the magnesium mixture is to be burnt; as in some positions that might be chosen we might not be able to work on account of there being insufficient space to place the light. To get the best effect I avoid having the light too much to the front, as it

causes flatness, and I prefer that it should, as a rule, not be higher than 4½ feet from the ground. To give details concerning an actual piece of work, I select the following :—

The interior of a furnace house, where there was no daylight, with a group of men working at the mouth of the furnace, was to be photographed. The color of the subject, except where the light from the furnace shone, was nearly black. The size of the negative was to be 12 × 10. Plates marked 170 H & D were used, and the lens, a Zeiss Anastigmat, f12·5, focal length 10 inches. The full aperture of the lens was used. The accompanying sketch is a plan of the subject. A represents the camera, B the light, C the furnace; the circles represent the workmen. The space on the ground included in the picture was about 18 × 20 feet, and 12 feet high.

The figures were placed in position, and the subject roughly focussed. Then a piece of sheet iron, which I found in the furnace house, was utilised for holding the flash powder. This was 3 feet long by 9 inches broad, and was placed on a trestle in the position indicated in the figure (B), the top surface being 3 ft. 6 in. from the ground. The whole of the top of the metal was covered with the cotton wadding, and upon this was evenly distributed (by sprinkling) 1½ oz. of the flash powder.

The subject was then finally arranged and focussed, and the slide introduced. The taper is lighted and the lens cap removed. A word to the men to keep quite still, and not be frightened at the light, and then standing at D the taper was applied to the wadding. The whole mass quickly burnt away, the duration of the flash probably not being more than a couple of seconds.

It will be seen that the whole procedure is very simple. Success depends, of course, on the care and judgment exercised beforehand. The operator must carefully arrange his subject, and then place the light in the position that will give him the best effect. The amount of flash mixture to be used will depend entirely upon the particular subject that is being photographed. I have purposely sketched a very difficult case—one in which, on account of the natural darkness of the interior, and also because the figures were in positions that they could not maintain for long, a larger amount of the flash powder was used. In the majority of cases a much smaller amount would be required. If it is required to make another exposure in the same place, ample time must be allowed for the fumes of magnesia to disperse. For this purpose, and for other reasons, it is always advisable to open any doors and windows before the exposure is made. With regard to the area over which the powder is sprinkled, this should always be fairly large, as by this means we get a softer lighting. The greatest possible care should be taken to shield the lens from the direct light of the flash, and the operator should stand well away from the powder when applying the light.

Figures, Facts, and Formulæ.

Metric System.

MEASURES OF WEIGHT.

1 milligram	= '001 gram, or 1-1000 of a gram.
1 centigram	= '01 " 1-100 " "
1 decigram	= '1 " 1-10 " "
1 gram	= the weight of 1 cubic centimetre of distilled water at 4° C. at the sea's level in the latitude of Paris.
1 decagram	= 10 grams.
1 hectogram	= 100 "
1 kilogram	= 1000 "

MEASURES OF CAPACITY.

1 cubic centimetre	= 1 millilitre = '001, or 1-1000 litre, or the volume of 1 gram of distilled water at 4° C.
10 cubic centimetres	= 1 centilitre = '01, or 1-100 litre.
100 " "	= 1 decilitre = '1, or 1-10 litre.
1000 " "	= 1 litre.

MEASURES OF LENGTH.

1 millimetre	= '001, or 1-1000 of a metre.
10 millimetres	= 1 centimetre = '01, or 1-100 of a metre.
10 centimetres	= 1 decimetre = '1, or 1-10 of a metre.
10 decimetres	= 1 metre = 100 centimetres.

English System.

MEASURES OF WEIGHT.

Avoirdupois Weight.

437½ grains	= 1 ounce.
16 ounces	= 1 lb. = 7000 grains.

MEASURES OF CAPACITY.

60 minims	= 1 dram fluid.
8 drams	= 1 ounce "
20 ounces	= 1 pint "
2 pints	= 1 quart = 40 ounces.
4 quarts	= 1 gallon = 160 ounces.
1 minim	is the bulk of '91 grain of water at 62°F.
1 ounce fluid	is the bulk of 437½ grains of water at 62° F.
1 pint	is the bulk of 1½ lbs. of water.
1 gallon	is the bulk of 10 lbs. of water.
1 cubic inch distilled water at 62° F.	weighs 252½ grains (nearly).

Comparison of Metric & English Systems.

1 gram	= 15'43 grains.
1000 grams	= 35'2 oz. = 35 oz. 87½ grains.
1 grain	= '0648 gram.
1 ounce avoirdupois	= 28'4 grams.
1 lb.	= 453'59 grams.
1 cubic centimetre	= 17 minims (nearly).
1 litre	= 35'2 ounces fluid.
1 ounce fluid	= 28'4 cubic centimetres.
1 pint "	= 567'6 " "
1'76 pints "	= 1 litre.
1 centimetre	= '3937 inch.
100 " "	= 39'37 " "
1 inch	= 2'54 centimetres.
1 foot	= 30'48 " "
1 yard	= 91'44 " "

GRAMS TO GRAINS.

Grams.	Grains.	Grams.	Grains.
'25 =	3'858	9'00 =	138'891
'50 =	7'716	10'00 =	154'323
'75 =	11'574	20'00 =	308'647
1'00 =	15'432	30'00 =	462'970
2'00 =	30'865	40'00 =	617'294
3'00 =	46'297	50'00 =	771'617
4'00 =	61'729	60'00 =	925'941
5'00 =	77'162	70'00 =	1080'264
6'00 =	92'594	80'00 =	1234'588
7'00 =	108'026	90'00 =	1388'911
8'00 =	123'459	100'00 =	1543'235

GRAINS TO GRAMS.

Grains.	Grams.	Grains.	Grams.
1 =	'064	20 =	1'296
2 =	'129	30 =	1'944
3 =	'194	40 =	2'592
4 =	'259	50 =	3'239
5 =	'324	60 =	3'887
6 =	'388	70 =	4'535
7 =	'453	80 =	5'183
8 =	'518	90 =	5'831
9 =	'583	100 =	6'479
10 =	'648		

CUBIC CENTIMETRES TO OUNCES.

1 cubic centimetre	= '0352 ounces, or 17 minims.
2 " "	= '0705 " 34 "
3 " "	= '1056 " 51 "
4 " "	= '1408 " 68 "
5 " "	= '1760 " 85 "
6 " "	= '2112 " 102 "
7 " "	= '2464 " 119 "
8 " "	= '2816 " 136 "
9 " "	= '3168 " 153 "
10 " "	= '3520 " 170 "

MINIMS TO CUBIC CENTIMETRES.

5 minims	= '295 cubic centimetres.
10 " "	= '591 " "
20 " "	= 1'182 " "
30 " "	= 1'773 " "
40 " "	= 2'364 " "
50 " "	= 2'955 " "
60 " "	= 3'546 " "
70 " "	= 4'137 " "
80 " "	= 4'728 " "
90 " "	= 5'319 " "
100 " "	= 5'910 " "

FLUID OUNCES TO CUBIC CENTIMETRES.

1 oz.	= 28'4 cubic centimetres.
2 " "	= 56'8 " "
3 " "	= 85'2 " "
4 " "	= 113'6 " "
5 " "	= 142'0 " "
6 " "	= 170'4 " "
7 " "	= 198'8 " "
8 " "	= 227'2 " "
9 " "	= 255'6 " "
10 " "	= 284'0 " "
20 " "	= 568'0 " "

35'2 oz. = 1 litre = 1000 c. c.

C. W. G.



EARLY the first thing necessary in "Photograms suitable for initial letters, tail-pieces, &c.," must be the "decorative" quality, a fact which seems to have been almost entirely overlooked by the competitors in our first Prize Competition. However beautiful a picture may be, it is useless for this purpose unless it will accommodate itself to the arbitrary conditions inseparable from its use in book-decoration. In the first place, initial letters, and even tail-pieces, are necessarily small in size; so that very delicate "atmosphere," and multiplicity of detail, which must be largely lost in reduction, are distinct disadvantages. From this failing most of the pictures in our recent competition decidedly suffered.

Next to confinement of space, we have to consider the nature of the surrounding matter. Being hard and geometrical in outline, the printer's type requires some strength of character in the photogram which is to decorate it; otherwise the photogram is so far lost that it becomes a mere meaningless patch in the midst of the hard, clean curves and outlines of the initial letter or type. For pure suitability to its purpose, combining in a marked degree the qualities above demanded, the cow's head used in the initial "C" of the present article was the best thing in the whole competition. Compare it with the sheep and lamb used in "P" of the other decorated page, and the difference is clear at once. The



△ AND △

SHEEP



Designed by



LAMBS



W. Northwood.



cow's head is notable for another feature, viz., the adaptability of its shape to the space it fills. This particular point has been carefully borne in mind by W. Northwood, whose work we are now considering, an witness the horses and landscape at the head of page 37; and, more notably, the head-piece and tail-piece of "sheep and lambs." It would be difficult to find a composition better suited to the circular-top form than Mr. Northwood's sheep picture, though it suffers somewhat from lack of vigor and superabundance of detail for half-tone reproduction. The tail-piece of sheep is a composition well suited to the arbitrary shape, satisfactorily strong in its contrasts, simple in its arrangement, and suitable in subject to the sentiment associated with the close of a chapter, or book. Compare it with the tail-piece of horses, and some of the qualities specially necessary in this decorative work become at once very apparent.

Mr. Northwood arranged his prints in the positions he intended them to occupy, and pencilled the decorative matter around them; so that in preparing them for the press we have simply inked over the lines of his design.

We reproduce one example from the work of Miss C. H. Curle, who was bracketed first with Mr. Northwood. It is decidedly the best tail-piece subject in the competition. Its lines and masses are distinctly good, the subject is perfectly suitable in sentiment. To everyone familiar with English poetry it will suggest Kingsley's sweetly pathetic "Sands of Dee."

"And call the cattle home,
And call the cattle home,
Across the sands of Dee."



Other examples of Miss Curle's work will be reproduced from time to time.

Many of the entries in our competition were like Mr. Northwood's in including line-work as well as photography, and one competitor so far misunderstood our intention as to omit photography altogether from two of his subjects, which were beautiful examples of design and draughtsmanship. Six initial letters by R. P. Brown, of Bradford, deserve a special commendation for exceedingly fine design and draughtsmanship, though the photograms were much too weak. F. Arney, of Salisbury, showed great care in adapting the lines of his photograms to the outlines of his letters and decoration; and Dr. Hall-Edwards, of Birmingham, contributed a set of very decorative subjects, with clever line-work complete. Of really suitable initial-letter work there was very little, and it is hardly necessary to dwell upon any of the other entries. Most of them failed from no lack of pictorial merit, but from not being so suitable as the work of the winners for the special purpose in view. No doubt many of the same competitors working in the light of the suggestions above made, would be much more successful, and we shall probably return to the subject and institute another competition on similar lines, before the year closes.

We need hardly point out the great scope for taste and judgment that is presented by decorative photography. And we need no great power of prophecy to predict that it will be largely taken up in the near future. The charmingly simple decorative work of Carine Cadby, the examples shown at the recent exhibitions by Will A. Cadby, Gambier Bolton, R. Le Begue, and several others; and the masterly work of J. Craig Annan, much of which is distinctly decorative, is being followed by many apt and able disciples. And by the many who are tiring of album views and lantern slides, more decorative work will be hailed as a welcome change, and as having the great advantage of practical utility. Though we cannot all become purveyors of photograms to the book-publishers and Christmas card firms, we can use our art for many home purposes. In the designing and executing of handsome covers for our own portfolios, of title-pages for albums, of the thousand-and-one articles of ornament and luxury that add to the comfort of a refined home, we may find profitable and congenial occupation. Perhaps the most obvious decorative application of photography in private life is to the preparation of a handsome private Xmas card, and to encourage

this particular class of work we now offer

A PRIZE OF THREE GUINEAS

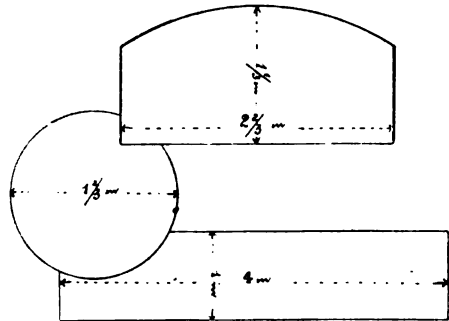
for the best set of three photograms suitable for decorating a Christmas or New Year card of the shape indicated by the annexed outline sketch. The sizes of the reproductions used on the card will be as under, and the originals may be any sizes that will reduce to these proportions, viz. :—

Head-piece . . . 2½ in. × 1½ in.

Initial, circle . . . 1½ in. diameter

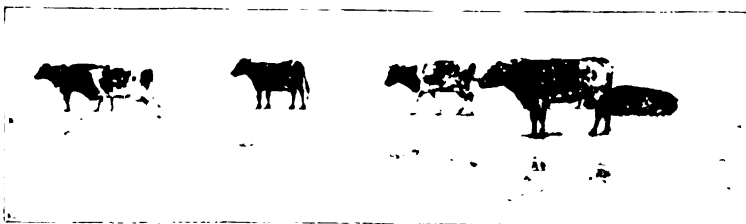
Tail-piece . . . 4 in. × 1 in.

In addition to the prize, there is very little doubt that if the subjects are sufficiently popular we can obtain buyers for the copyrights of a dozen or more sets, amongst the Christmas Card publishers, which will also mean, in the case of thoroughly satisfactory work, succession of commissions, and, in fact, a business sufficient, if energetically followed up, to secure a good livelihood. We stipulate for the right of reproducing



the prize set of prints, and three other sets next in order of merit in *The Photogram*, but reserve to the producers their copyright, and undertake to place the best work before the leading buyers of such copyrights.

The competing prints must be in our hands not later than November 20th, 1896. They must be mounted on plain boards trimmed to the size of the prints. Each set of three must be in a separate, unsealed envelope, bearing the name and address of the sender, who may enter as many sets as he likes. Those who wish their prints returned, in case of non-success, must enclose stamps for the purpose.



"ACROSS THE SANDS OF DEE."

Psychic Photography.

"LIGHT," one of the spiritualistic papers, quotes very largely from our "Pow-Wow" of last month, on Psychic Photography, and concludes by saying—

"This is good so far as it goes; but surely the time has come when there should be suspense no longer. Mere paper discussions will never settle the question. We had supposed the testimony of the late Mr. Traill Taylor to be conclusive, but if that is not so regarded we should like to see the appointment of a small committee of practical photographers, who would undertake to conduct a fair and exhaustive investigation, in cordial co-operation with some of the most successful mediums for psychic pictures. Will the editor of *The Photogram* do what he can in this direction?"

On receipt of the marked copy we wrote the following letter to the editor, a letter which we believe embodies the position of the best informed photographers with regard to this subject.

The Editor: *Light*.

January 4th, 1896.

DEAR SIR,—Referring to the paragraph in which you sum up the result of our Round Table Talk on "Psychic Photography," we may safely say, as representing photographers, that there are a large number of them in an interested but perfectly neutral position as regards this subject. For our own part, we have always been prepared to publish as fully as possible any evidence that seemed likely to be of use to photographers, but have carefully abstained from stating any opinion as to the genuineness or otherwise of alleged "psychic" photographs. The attitude of most photographers with regard to this subject we believe to be thoroughly irrational and unscientific, though we must admit that the way in which the evidence has generally been laid before them is largely responsible for this attitude. We cannot conceive of any "psychic" photographs that could, in themselves, have any evidential value whatever, apart from the supplementary evidence as to the conditions under which they were taken. Therefore it is useless for believers to show "results," and expect by this means to convert sceptical photographers.

You speak of the testimony of Mr. J. Traill Taylor. Mr. Taylor was a very intimate friend of ours, and we knew a great deal of his work beyond the particulars which he published; but we do not know that he has stated publicly any conclusion derived from his own testimony. The chief testimony, you may remember, was given at a meeting of the London and Provincial Photographic Association, and certainly it was not considered conclusive by the gentlemen present at the meeting.

To come to your request that we will do what we can in the direction of the appointment of a small committee of practical photographers, we think that the conditions suggested in our opening of the discussion should cover your requirements. If no, and you can suggest any other arrangement that would be more satisfactory to those who are already convinced of the reality of "psychic" photography, we shall be glad to fall in with them if it is at all possible. Our own knowledge of the subject leads us to think that there would be a probability of greater success if the series of experiments began as suggested to Mr. W. T. Stead, with only a couple of photographers in addition to the medium and assistants. If the results of tests seemed satisfactory, the conditions would then be much more favorable for introducing a larger committee. We think that everyone taking part ought to be pledged to give his or her best and undivided attention for a considerable period of time (say two evenings weekly for three or six months if necessary) to an earnest endeavor, on scientific lines, to ascertain the truth. To be satisfactory to photographers, the spiritualist (with whom lies the onus of proof) must be perfectly prepared to allow of every possible experiment that the photographers can suggest, and must not fall back upon the charge that the investigators are sceptics. We mention this because we have been in touch with a considerable number of so-called investigations, which usually end in the photographic investigator (who has in most cases been a believer in the possibility of such phenomena) making a demand to which the professional photographer indignantly refused to accede. Take a recent case, where a correspondent of ours (an amateur photographer) and a spiritualist

had several sittings with his wife at the studio of a professional photographer who is known to obtain "psychic" pictures. The results were perfectly satisfactory until the amateur made the suggestion that he should be allowed to photograph the photographer's backgrounds without any sitters in position. The photographer indignantly refused, and is, therefore, rightly or wrongly, liable to be looked upon by all unprejudiced photographers as practically a convicted fraud.

In conclusion, if you can provide the conditions for exhaustive research, so far as the production of the phenomena is concerned, we can undertake to provide a committee, of any number that you like, of men whose integrity and sound judgment will hardly be doubted, and who would not enter upon the experiments with the preliminary conviction that fraud existed, and it was their duty to unearth it.—Yours faithfully,

THE EDITORS, *The Photogram*.

If there is a chance of thoroughly investigating the matter, we are sure that a committee of reliable persons, who would be prepared to give six months steady labor to the subject, can be found. Undoubtedly there has been a great deal of fraud and a great deal of ignorance of photography on one side of the question. There is also in the mind of many photographers a dogged prejudice which refused to treat the subject as one worthy of investigation. This, we know, has prevented many photographers who have investigated the subject and have thought they found evidence of hitherto unacknowledged forces, from making public their results.

We have received a certain amount of correspondence on the subject of Psychic Photography; amongst other matters a letter from a trustworthy source, which gives the name of a young photographer who has hitherto taken no part in spiritualistic work, and who is unknown to the public, but who is said to be a successful medium, and who will be willing, under certain conditions, to work with an investigator or a small committee. His only stipulations seem to be that the investigation shall be thorough, that he shall not be mentioned in connection with it until an exhaustive series of experiments have been made, and that no form of profit-making shall enter into the matter. A number of examples of alleged psychic photographs have been received, with statements as to the conditions under which they are said to have been taken. We do not think that in any case the conditions were such as would be accepted by photographers generally. To us, at any rate, the pictures and the testimony taken together, appear to have no evidential value for sceptics. Though we would not for a moment doubt the bona fides of the correspondents sending these evidences, we do not think that they are sufficiently important for reproduction in our columns. On the other hand we have received certain similar results which the senders say are obviously fraudulent. As they have not detected any fraud, we think that this position is an unscientific one. It is true that the pictures are such as might be produced by supplementary exposure, and similar methods, but this seems no proof that they were produced in this way. In fact, it seems to us that photographs as evidence either *pro* or *con* are valueless, apart from the testimony accompanying them.

We have received what purports to be a message from the late J. Traill Taylor. It is not our business to investigate anything beyond so-called

psychic photography, but this particular communication bears upon the subject, and we shall give, as fully as possible, such statements as are forwarded to us. We may state however, that such communication was not received from or through any of his family.

As there is evident misconception, both amongst photographers and spiritualists as to our personal position on this matter, we may say that we believe it is the same as was occupied by the late J. Traill Taylor for some time previous to the last two or three years of his life. We have never attended a spiritualist seance, nor taken part in any public or semi-public experiments ostensibly carried on by means of occult forces. We have been connected with psychic photography only so far as regards attending with Miss Power, at the studio of H. J. Whitlock, of Birmingham, watching the development of certain plates which were said by Miss Power to have been exposed under certain conditions which led her to expect some psychic forms, and testifying to the fact that there was absolutely no such appearance on the plates. We have frequently been asked to take part in promising experiments, but we refuse, unless the parties wishing to prove their case are prepared to accept full investigation (which does not mean suspicion).

In the face of an immense amount of evidence laid before the world, by the Psychical Research Society and many eminent scientific men of unquestionable integrity, we hold the position which we think must be that of everyone who knows the evidence—that forces which are not yet understood by so-called “materialistic science” do undoubtedly exist. Further than this, we know of no evidence or argument that proves “psychic photography” either impossible or improbable. We think that most of the evidence hitherto adduced is very weak and unreliable, and that none has been sufficiently strong to prove the case to the satisfaction of honest agnostics, when taken in connection with the other cases which any investigator must have met with, in which equally satisfactory evidence has been given up to a certain point, after which it has broken down under conditions that suggest (to the outsider) distinctly bad faith on the part of the operator.

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A new Conductor of Light.—This is the somewhat remarkable phrase used by the *Daily Chronicle* in mentioning the ready transparency of wood and other organic tissues to light of great wave length; a fact well known to scientific men but apparently unknown to the *Daily Chronicle* leader writer. *The Chronicle* then wonders much at Professor Röntgen, who is said to have photographed tin soldiers and other objects shut up in a wooden box. Only good conductors of electricity, such as metals and graphitoid carbon are essentially opaque: brick walls, trees, animals, ebonite, black and colored glasses, being essentially transparent, although discriminative as to the kind of light they will allow to pass. A ream of white paper obstructs light by the loss involved in repeated reflections, and a felted mass of clear glass threads would do the same.

Current Topics

A free darkroom for touring photographers is provided by Thomas Mason, optician, 5 Dame-street, Dublin.

A Photographic Society has been formed at Moseley, the subscription being fixed at five shillings a year. Particulars on application to Fred. Coop, Glenwood, Church-road, Moseley.

Prizes for Dog Portraits are offered by *The Stock-keeper*, 77 Fleet-street, E.C. The prizes include a three-guinea cup offered for the best photogram of a dog exhibited at the current Agricultural Show.

The South London Photographic Society will hold its seventh annual exhibition in the Public Baths, Camberwell, early in March; there are six open classes. Further particulars from Chas. H. Oakden, 30 Henslowe-road, East Dulwich, S.E.

“Beauty Spots.”—In connection with the Exhibition of the Photographic Society of Ireland, to be held in February, it is intended to have a special exhibit of photograms representing Irish scenery, historical and archaeological remains, character sketches, &c. This is similar to our competition (class 6), which closes on Feb. 29.

The London and Provincial Photographic Association has removed to new premises at the White Swan, Tudor-street, New Bridge-street, Blackfriar's Bridge. On January 2nd, T. E. Freshwater, F.R.M.S., exhibited his new method of projecting stereoscopic pictures with the optical lantern. He follows somewhat on the lines of Ducos du Hauron's anaglyphs, but provides amusement for a roomful of people simultaneously, instead of one at a time. By projecting two adjacent images, one colored green and the other red, he enables the assembled company (on examining them through spectacles provided with one green and one red glass) to see the pictures with true stereoscopic effect.

Photographic Survey.—The sub-committee appointed by the Congress of Archaeological Societies, in union with the Society of Antiquaries, has reported on the Photographic Survey of England and Wales, which will be forthwith undertaken by the above-named societies. The honorary secretary, Ralph Nevill, 13 Addison Crescent, Kensington, will be glad to send a copy of the report to any photographic society asking for it, as the antiquaries are relying largely upon the co-operation of the photographic societies. We have always felt that the Royal Photographic Society made a distinct blunder in not taking up the suggestion made to them some four years ago by W. Jerome Harrison, in a lengthy paper dealing with the subject of the photographic survey, and urging the society to take up the work.

Traill Taylor Memorial.—A largely attended meeting was held at Anderton's Hotel, on December 20th, Sir Henry Trueman Wood

took the chair, and various suggestions as to form to be taken by the proposed testimonial were considered at some length. Finally an Executive Committee was appointed, consisting of Sir Henry Trueman Wood, T. Bedding, T. R. Dallmeyer, R. P. Drage, P. Everitt, E. W. Foxlee, A. Haddon, A. Rayment, and H. Snowden Ward, with A. Mackie as the honorary secretary, and a general appeal to photographers is to be made. The memorial will probably take the form of a Lectureship in connection with photographic progress, and whatever plan is decided upon will be submitted by the executive to a meeting of subscribers for their confirmation.

The first meeting of the executive was held on January 8th, at the rooms of the Royal Photographic Society, when it was decided that the testimonial should take the form of a Lectureship, the lectures to be given either in London or the provinces, and the Lectureship to be managed by a council of ten London and ten provincial members, to be elected triennially, the first council to be elected by the present General Committee. The council should elect two trustees in whom the funds should be vested. It was hoped that no less than £500 would be raised, and several members of the council strongly urged that a still larger sum should be attempted, and would be necessary to establish a Lectureship on a thoroughly substantial basis. It was decided that a public subscription list should be forthwith opened, and the secretary reported that he had already received very satisfactory support in this direction. It was decided that representative agents in the various English speaking countries and colonies, and also in the principal Continental countries should be asked to undertake local subscriptions on behalf of the general fund.

Ten Years' Penal Servitude, of which we spoke last month, seems likely to continue to be the lot of the unfortunate photographer, Mendel Howard, unless his fellows shew more interest than they have done. Last month we announced particulars of the case, stated that £50 was necessary before any action for relief could be taken, and opened a subscription list with two promises of £5 each. Our issue appeared in the Peace-and-Goodwill time—a day or two before Christmas. The appeal had already appeared in *Process Work*, but the total result of the two appeals is one letter enclosing five shillings. All honor to the solitary contributor, but we trust he is not to remain alone. Time is flying, the prisoner is still in gaol, nothing (apparently) can be done until the total sum is raised, and surely £40 is no large matter for the whole photographic and photo-mechanical craft to raise. The prisoner's solicitors say they cannot move in the matter until the £50 is supplied or guaranteed. The American Consul, to whom we applied, as Mendel Howard is an American subject, says that he is powerless to move, and has no funds that he can devote to such a purpose. There *are* steps that we can take, though they are so desperate that we wish to avoid them; but unless photographers provide the sum necessary for the steps already suggested, we must do what we can, and hazard ten years of a fellow-creature's life on a chance little better than a cast of the dice.

J. H. AINLEY writes:—I trust that photographers, engravers, and photo-process workers, will each give a trifle to help the poor man to prove his case. He is undoubtedly a very clever man, and if not guilty his imprisonment is dreadful.

MENDEL HOWARD FUND.

Penrose & Co.	£5	0	0
Proprietors of <i>The Photogram</i>	5	0	0
J. H. Ainley	0	5	0

One or two London newspapers and several important provincial journals have referred to this case as one in which the circumstances demand some such public assistance as we are attempting to obtain. They generally agree that as the amount of money needed to complete the case is so comparatively small, there should be no difficulty in raising it amongst photographers.

Will twenty firms contribute £1 each, and eighty assistants give five shillings?

R.P.S. Politics.—That meeting in December, to consider and take steps for carrying out the suggestion made in the president's annual address, was a revelation to some of the members of the "Royal." Although the society has made so much progress during the past year, even the most progressive members scarce hoped for such a result. The suggestion was that some annual change in council should be secured by the rules. The requisitioners who caused the meeting to be called, asked that if there were not five natural vacancies on the council at each election, that number should be created by a retirement of a sufficient number of senior members. The president ruled that the meeting could not amend the Society's constitution but could pass a recommendation to the council. Some sixty or seventy members were present, and at first the progressives feared they might not have a great majority, but, as the discussion progressed, the meeting became enthusiastic, and finally the resolution was carried with but two dissenters. One of these, the second speaker in the debate, did ill service to the society when he suggested that young men, active in this propaganda, wished for places on the council, and that "those who most desire positions on the council are the least desirable men for such positions." Such insinuations are unjust, and the case was not improved when the speaker further stated that the old members had no personal desire to retain their seats, but did so, at inconvenience to themselves, purely for the good of the society. There should be no antagonism between old members and young. Fortunately, there *are* young members who are earnest, active and capable; but the best of them will hesitate to stand for election if they are to be publicly branded as selfish place-hunters.

The resolution for securing a slight change of council every year is decidedly to the good; but there is another important point to be gained before the election is perfectly free. At present, the names of all nominators are given on the ballot papers. Unfortunately, the heavy majority of the electorate is out of touch with the society and its officers, and, as a matter of actual fact, the voting is very largely influenced by the number of nominators against a candidate's name. This places an immense power in the hands of any clique or party, whether it be (as sometimes in the past) the council tacitly arranging for its own re-election, or,

as may occur now or in the future, a progressive gang manœuvring for its own particular programme. The publishing of nominations must be removed, but meanwhile, the only safeguard for the member who wishes his vote to be effective, is to give no stray votes, as every vote given at random helps to nullify those given "with intent." The important influence of the society is our excuse for publicly discussing what are, technically, members' matters.

The Photographic Copyright Union has issued a pamphlet of revised rules, which can be obtained free from the secretary, Henry Gower, Botolph House, Eastcheap, London, E.C. No charge is now made for membership. The committee consist of Frank Bishop (Marion & Co.), Joseph J. Elliott (Elliott & Fry), J. Lillie Mitchell (London Stereo. Co.), Wm. Downey, Alfred Ellis, E. Frith (Frith & Co., Reigate), Jas. Lafayette, and Louisa Wilson (G. W. Wilson and Co., Ltd.)

Two forms, approved by the Union's solicitors, are supplied to members at a nominal figure, and as they embody the policy of the Union we reproduce them in reduced size:—

FORM A.] : - - - - - 2282 2282 --- 7-3

PHOTOGRAPHIC SECTION OF THE LONDON
CHAMBER OF COMMERCE.

BOTOLPH HOUSE, EASTCHEAP.

Photographic Copyright Union.

In reply to your request for permission to copy my photograph of.....I beg to state that being a Member of the above Photographic Copyright Union, I am bound by its regulations to make a charge for the permit required. My fee in this case will be.....and on receipt of this amount I will forward you official permission.

NOTICE.—Anyone copying my photographs for the purposes of reproduction or illustration either in Newspaper, Magazine, Book or any other form, without first obtaining my permission, render themselves liable to an action for infringement of my copyright.

FORM B.]

RECEIPT GRANTING PERMISSION TO USE COPYRIGHT
PHOTOGRAPHS.

Issued by the Photographic Copyright Union.

.....

.....

.....day of.....189...

In consideration of the sum of.....hereby acknowledged, you are authorised to reproduce, by process, my Copyright Photograph of.....in any size not exceeding.....my name to be printed under each impression.

This Permission and Fee is for reproduction in.....and for one issue only, and the subject may not be reproduced or sold as an independent illustration separate from the above publication and its accompanying letterpress. If any other use is desired a fresh permission and payment is required.

NOTICE.—Anyone copying my photographs for the purposes of reproduction or illustration either in Newspaper, Magazine, Book or any other form, without first obtaining my permission, render themselves liable to an action for infringement of my copyright.



1. "Photographischer Notiz-Kalender." Edited by Drs. Stolze and Mieth. Price 1s. 6d., post free 1s. 9d. Wilhelm Knapp, Halle A/S.

3. "Marsh Leaves." By P. H. Emerson. With sixteen photo-etchings. Price 12s. 6d. nett. London: David Nutt.

5. *The American Annual of Photography for 1896.* Price 75 cents. New York: The Scovill-Adams Co.

6. "Movement." By E. J. Marey. Translated by Eric Pritchard, M.A. Price 7s. 6d. London: Wm. Heinemann, 21 Bedford-street.

7. "Douze Petites études de Femmes." By R. le Begue. Paris: *Journal des Artistes*, 33 Rue du Dragon.

8. "Photographer's Diary." Edited by E. J. Wall, F.R.P.S. Price 1s., post free 1s. 1d. London: Blackfriars Photographic and Sensitizing Co.

9. "The Grammar of Photo-Engraving." By H. D. Farquhar. Price, cloth, 2s. 6d. nett; post free 2s. 9d. London: Dawbarn & Ward, Ltd.

10. "Photographer's Miniature Annual." Edited by Thomas Bolas, F.C.S., F.I.C. Price, cloth, 6d.; post free, 7d. London: Dawbarn & Ward, Ltd.

The Editor of Photo Notes informs us that the owner has ceased its publication.

Phrenologists are celebrating the centenary of Dr. Gall, who, in 1796, began his phrenological lectures in Vienna.

Some bright matter, as well as excellent half-tone illustrations, is given in *The Australasian Photographic Review*.

A Photographic Annual is a capital form of advertising a photographic studio business, adopted by A. F. Colborne, 17 and 18 Castle-street, Canterbury.

The proprietors of The Photographic Times inform us that, although they now have no authorised English agent, the magazine will be sent post free direct to distant subscribers.

The Catalogue of the Exhibition of Amateur Photographers, recently held in Hamburg, is a well-printed book enriched with reproductions of some of the most important exhibitions.

A New Limited Company has been formed to take over the *Magic Lantern Journal* from J. Hay Taylor, the present proprietor. The capital is £2,000; office—56 Chancery-lane, E.C.

Postage Stamp Portraits are a good line at holiday times; those made by Wells and Co., Avenue-road, Southgate, are of excellent quality, judging by the numerous samples sent to us by the firm.

Taking a leaf out of our own book (*Photograms of '95*) the Salon Photographique de Bruxelles will issue through Roland and Bovier, 168 Boulevard Anspach, Brussels, a critique of its exhibition. The price will be 1fr. 50.

A useful pocket companion that reached us as we were making ready for press, is the "Miniature Annual" (10), edited by Thomas Bolas, F.C.S., F.I.C. This is quite a photographic midget, being only 2 by 2½ in. in size, but its contents are excellent.

Excellent photography, block-making and printing, go together in a little souvenir of the Cotton States Exposition. The official photographer (as at Chicago) is C. D. Arnold, and the book is printed by C. B. Woodward, of the National Chemigraph Co.

"The Photographic Times" and its proprietors, the Scovill Adams Co., have just removed to magnificent new premises, Nos. 60 and 62 East Eleventh-street. The *Times* has just supplied to its readers a complete photographic and reference library, and a convenient studio and dark-room.

In addition to being a useful calendar and exposure note book, the "Photographer's Diary" (8) contains a list of British towns with recommended hotels, dark-rooms, and cycle repairers. As it is well bound and of handy pocket size, we expect this note book to be in considerable demand, especially among amateurs.

The Calendar edited by Drs. Stolze and Miethé (1), is one of those handy little books which appear at this time of the year; it contains a diary and a well drawn up inset which can be used by professional photographers as a day book. Innumerable tables of considerable value have been collected, and the amateur is catered for by very complete working directions and formulæ for all processes.

Anyone intending to take up photo-engraving will gladly welcome the latest text book (9) on the subject. The author takes the reader through the process in detail, from drawing for reproduction to making stereos and mounting the finished blocks. In addition to this he touches upon the chemicals used and gives an outline of some of the less used methods of photo-engraving. It will undoubtedly be a decided help to beginners.

Two welcome Annuals were mentioned under this heading last month, viz., *The British and Colonial Druggists' Diary* and *The British Journal Almanac*. The first named is a desk diary interleaved with blotting paper, and contains a lot of information useful alike to druggists and photographers. The *Journal almanac* is in its usual form; in addition to its many useful articles on photography, it contains a huge conglomeration of trade catalogues. As usual, it will be welcomed by all photographers into whose hands it falls.

The work of R. le Begue shows the spirit of a true artist, and one who is not prepared to admit that photography is so terribly fettered as some would have us believe. Some of his efforts, and he is bold enough to show works that are not perfect, so long as they have novelty and experimental value, were shown at the last Salon, and others have been reproduced in various journals. His latest work (7), a dozen small studies of women, is just published in Paris, in the form of a portfolio, from the office of the *Journal des Artistes*. The pictures are very fine collotypes, on rough paper, small in size, but full, in most cases, of artistic feeling. A few, though possessing decorative value, suffer from superabundance of detail. The series has much to teach to students of the nude and of the draped figure.

The Applications of Photography, especially the modern, the scientific, the unusual

applications; these are the key note of the work of *The Photographic Times*, these contribute largely to the interest of its "American Annual" (5). The latest issue is stronger than ever in this direction, and we think Mr. Woodbury has decidedly hit the public taste. The transit of Venus, the analysis of sound, the vocal cords in action, and the speed of projectiles, are amongst subjects now studied and recorded by photography, and of the study and recording of which the Annual gives illustrated particulars. This class of article, however, is only a portion of Mr. Woodbury's bill of fare. He has a great array of the usual year-book matter, hints, wrinkles, dodges, and suggestions; a very complete lot of reference matter; and a large number of illustrations of varying degrees of interest. Taken altogether, the book is so good that we can but regret the apparent gross mismanagement which results in its having, so far as we can learn, no British agent this year. We know that thousands of copies have been sold in England in previous years, and why the field should be dropped we cannot understand.

It was rumored, not long ago, that P. H. Emerson had finally foresworn the camera. If there was any basis of truth in the rumor, we trust that he has reconsidered the decision, for his "Marsh Leaves" (3) has taken us away to the fen-land, its illustrations have again proved that there can be mystery and poetry in camera-work, and we feel that we want more. There are too many photographers ever insisting on the eternally "practical," grubbing amongst formulæ and apparatus, forgetting that photography is a means to an end,—to many ends,—but is not an end in itself. Such work as the sixteen photo-etchings with which Dr. Emerson illustrates his book is full of inspiration to anyone with a spark of poetry in his nature; and carries many a lesson for the practical camera-worker. The studies are trifles,—just Marsh Leaves,—like the trifles of prose-poetry by which they are accompanied. But they are by no means "unconsidered" trifles. Like the brief word-studies, they are essays of sentiment; full of the spirit of the marsh-land. Like the word-studies, they have some jarring notes, but these will be forgiven or overlooked on account of the real beauties of the work. It is a good book for a present, but it is also a good book to buy and keep.

Animal movement and the hundred-and-one subjects that are best studied by high-speed photography have attracted such general attention, that an exhaustive hand-book (6), by an authority so competent as Prof. E. J. Marey, is sure of a hearty welcome. Muybridge, Anschütz and Marey are the three names naturally connected with pioneer work on this subject; and of the three, Marey, with ample public support, has embraced the widest range of subjects. Anschütz gave special attention to animal motion and pose, rather as an artist-naturalist than as a chronographer. Muybridge also made wonderfully complete and valuable physiological records of men and animals; while Marey, if his research has not been so deep as that of Muybridge in one branch, has worked out an immense number of special applications and procured an invaluable series of records of

almost every possible class of movement that can have interest for the artist or the man of science. His book is intended to serve as a complete guide to the methods of chronophotography suitable under all possible conditions. It first deals with non-photographic methods of chronography, and then takes up the photographic methods in general outline, finally considering the special apparatus and arrangements necessary for various classes of work. The main sections are—i. Time-measurement by means of photography. ii. Space-measurement ditto. iii. Movement, its measurement, graphic representation and analysis. iv. Chronophotography on fixed plates. v. Description of apparatus. vi. Applications to mechanics. vii. Chronophotography on moving plates. viii. Human movements. ix. Certain movements in man. x. Locomotion in man. xi. Locomotion of quadrupeds. xii. Locomotion in water. xiii. Aerial locomotion (flight of birds). xiv. Ditto (flight of insects). xv. Comparative locomotion. xvi. Applications of chronophotography to experimental physiology. xvii. Microscopic chronophotography. xviii. Synthetic reconstruction of the elements of an analysed movement. Over two hundred illustrations are used to explain the apparatus and arrangements, and to give examples of the principal applications. Even to one who is never likely to take up chronophotography the book is fascinatingly interesting. To intending workers in the subject it is indispensable.

In Natural Colors.—An example of "natural color" work produced by Colin Campbell's process, which has been much trumpeted by one or two Scottish papers, is to be seen in our reading room. Another we cut up for test purposes, results of which will be given next month. But first, as to the method and its author. The alleged invention of natural-color photography by a worker in Cumnock, N.B. (photographer's name not given) was announced in an Edinburgh newspaper, to which we wrote, expressing doubt of its genuineness, but asking for fuller particulars. From this correspondence we obtained the photographer's name and wrote to him, with the result that we have just received samples, with apology for delay. We do not know how long Mr. Campbell has been in Cumnock, but he tells us that he has been busy with portrait work, which has somewhat delayed progress with the "natural-color" process. He says, further:—

"Your magazine is the first I have answered with samples of my work with the exception of two local papers. The process is a secret, and I give no information further than I can produce a negative in color direct from nature, and direct from the negative I can produce positives in color. I will make my process known, but not in the meantime. I have had various offers for it, but I have not accepted any of them, as I mean to work it myself. Anyone who can produce the same from the information given, or from the samples which I supply at 2/-, is quite at liberty. I may say I have hundreds of negatives, but I have only three landscape negatives taken with my new process."

One of the prints received is a river scene, the other, an out-door portrait of a young lady leaning against a tree. We should at once say that they were ordinary gelatino-chloride prints of fairly good technical quality, stained (probably while wet) with aniline dyes. There is a great deal of color, which looks as if it were applied by the ordinary hand methods, and which is about as

"natural" as any of the colored "local views" sold by the stationers. The prints have a gelatine surface, and are mounted with rubber solution, which at once suggests that a water-mountant is inadmissible, from fear either of spoiling the surface or causing the color to run. The color partly penetrates to the back of the paper; hence it is not apparently connected with the emulsion. At the time of receiving the prints we had but three days before going to press, which, in January light, is not long enough for a good fading-test. On the supposition that the colors were aniline dyes, we divided one of the prints into four parts for the following treatments, viz.: No. 1.—Exposure to sunlight, with part covered, to test for fading. No. 2.—Thorough soaking in water. No. 3.—Soaking in weak solution of glacial acetic acid. No. 4.—Soaking in solution of sodium nitrite.

The New-Year Changes are startling in their unanimity. Our old magazine, which we founded and controlled for four years, has made an immense change and improvement. Its page is enlarged to the same size as our own, the paper is changed to heavy "art" printing, and the year begins with a very handsome double number, at sixpence. *The Photographic Review of Reviews* has dropped the last two words of its title, has reduced its price from sixpence to the same figure as our own, has changed the style of its matter, and removed its publishing offices to 15 Farringdon-avenue, almost opposite our own doors. *The British Journal* comes out with several minor re-arrangements, announces that its offices have been painted and garnished, invites everyone to visit those offices, and,—inserts an article by H. P. Robinson. *The Amateur Photographer* is very largely re-modelled in matter and style, is to be increasingly illustrated, and promises many decidedly popular novelties. *The Magic Lantern Journal* has made a considerable change also, of which it is not allowed to us to say more just now. But the greatest change of all is in the *News*. It has definitely laid its course to become the journal of the amateur, reduces its price to one penny weekly, and is decidedly the best printed and best illustrated of the weekly papers. Its management is bright and up-to-date, and evidently a good deal of capital is to be sunk in a determined effort to give it the front position. Curiously enough, as showing how different minds think alike, two of its principal features are on almost identical lines with some which we announced a few months ago, and have in preparation for the summer months. One, "Photographic Industries" has the exact title; and the other, an introduction to some of the best landscape districts, is on the line of our "Beauty Spots." We believe this general competition will be no disadvantage to the journals, and certainly it is all to the good from the public point of view. To ourselves it is especially flattering, within two years of a start at which our speedy dissolution was prophesied, to see two monthly contemporaries step on to practically our own lines, and two of the weeklies follow our lead so far as their conditions permit. In this general changing, *Photography* is the only journal that announces nothing startling. We suppose that, secure in its special position

as the news-paper of photography, it feels no alteration of policy is necessary.

Changes, and even changes on our own lines, are not confined to England. *The Photographic Times*, of New York, recognising the importance of photo-mechanical work, announces a new journal to deal with this subject only. *The Times*, itself, continues its strong march of progress, gives a Christmas number, as a promise for the future, that is lavish in its style of adornment. *The American Amateur*, too, has a special Xmas number, which reflects immense credit upon Alfred Stieglitz, to whose artistic taste and practical ability its beauty is due. It introduces illustration in various colors on the pages of the magazine itself and inserted amongst the text, which is in black. On the corner of the front page a three-color butterfly is printed, and the initial on the same page is a portrait study printed in a rich brown. Some of the illustrations are in one color underlaid by a pale tint, and the total result is a luxurious magazine, ahead of anything previously devoted to photography.

Since our Leader was sent to press we have met four of the members of the P.C.U. Council, who quite see the difficulty of their rule in some of the cases we quote. The Vice-President, who is an authority on copyright matters, promises careful attention to the suggestions; and possibly some of our readers who are interested in the journalistic and literary applications of photography can suggest modifications of the rule that will enable them, too, to benefit by membership in the Union.

A writer in *The Kodak News* wonders whether pictures made with a kodak should be called kodactures, kodackments, kodagraphs, or kodagrams.

The prices and titles of the following were printed at the head of "Prints" last month:—

A very interesting book on the subject of clouds (1), by Captain Wilson-Barker, is worth careful study by photographers; not only by reason of the weather wisdom contained in it, but because it is illustrated with photograms of many varieties of cloud forms which are lucidly described in the text. The illustrations are an education in themselves.

A Capital Album of views of St. Paul's Cathedral (5) has been sent to *The Photogram* reading room. The large reproductions of photograms by Freeman Dovaston are excellently printed, and the descriptive letterpress is explicit and concise. The publication certainly deserves a cordial reception.

We have before spoken enthusiastically of Henry W. Cave's volumes on "Picturesque Ceylon," and perhaps the fullest praise that we can give to the third of the series (6) is to say that it quite equals the standard of its predecessors. Mr. Cave has a good eye for the picturesque, and is specially happy in some of his atmospheric effects. An example of this is "The Shadow of Adam's Peak," in which the great hill throws a great wedge of shadow over land and cloud, widening from its apex at the mountain-top until it fills the whole breadth of foreground, and

showing black between the light haze that is illuminated by the sunlight streaming on both sides of the mountain. The letterpress is full of anecdote, native life, folk-lore, and legend. Elk-hunting, tea-farming, the quality of the hotels, and the troubles of native "bearers" are all entertainingly touched upon by one who has the gift of quick and accurate observation. The full-page illustrations, thirty-four in number, are further examples of the careful and excellent work of the Woodbury Permanent Printing Co. Altogether, there will be few handsomer or more interesting gift-books this Xmas season.

Obituary.

Henry J. Newton, whose death we sincerely mourn, was killed in New York by a cable car, on December 23rd. He was one of the oldest workers in experimental photography, a man esteemed and honored in his own country, and for many years president of the photographic section of The American Institute. He was the most intimate American friend of the late J. Traill Taylor, who was his guest during his few days recent visit in New York. It was with Professor Newton and one or two other sceptics that Mr. Traill Taylor, many years ago, undertook the investigation of certain alleged occult phenomena occurring in New York. After exhausting every means in their power to prevent the possibility of imposition, both Mr. Taylor and Prof. Newton were driven to the conclusion that the phenomena were genuine; though we believe that Prof. Newton eventually accepted a definite spiritualistic theory in explanation, while Mr. Taylor always maintained an open position. It was this American investigation, doubtless, that induced Mr. Taylor to take up, at a later time, the investigation of so-called "spirit" photography, on which he reported to the London and Provincial Photographic Association.

Professor Newton's interest was not confined to photography, but he took an active part in all branches of the work of the American Institute. His widow, too, is an active worker in literary and progressive circles, and has been for many years chairman of the Executive of Sorosis, the leading Woman's Club in America, from which position she only recently retired.

It is with regret that we also record the death of Dr. Julius Schnauss, on December 6, at the age of 68. His particular department was the study of photochemistry, which he first took up in 1849. He was a constant contributor to *Horn's Photographic Journal* and *The Photographisches Archiv*. In 1855 he founded at Jena a "Photographisch Chemischen Instituts," which was a great success, and in 1857 he founded the "Allgemeiner Deutschen Photographen-Verein."

We also have to record the death of E. G. Wood, 74 Cheapside. Mr. Wood, who was in his 85th year, was born in Islington, but as a lad moved to the City, where he resided for the remainder of his days. As a maker of scientific instruments he enjoyed a wide fame.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

Carter & Co., Farnival Street.
 Vincent & Blaikley, Barbican.
 Fuerst Bros., Philpot Lane.
 F. C. Clarkson, Fenchurch Avenue.
 The London Stereoscopic Co., Ltd., Regent Street.
 Dawbarn & Ward, Ltd., Farringdon Avenue.

New Goods, &c., Advertised.

Brief Chats about Lenses. No. 2. Taylor, Taylor and Hobson.
 New Series Improved Patent Lanterns. Ross & Co.
 "The Photographer's Miniature Annual." Carter & Co.
 Two New Portrait Lenses. J. H. Dallmeyer & Co., Ltd.
 "Lumiere" Plates. Fuerst Bros.
 "Bromide" and "Sylvio" Papers. Wellington & Ward.
 "The Process Year Book." Penrose & Co.
 Husnik & Hausler's Photo-Chromo Blocks. F. C. Clarkson.
 "Photo Engraving." Dawbarn & Ward, Ltd.
 The Carlton Hand Camera. The Stereoscopic Co., Ltd.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk (*) indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

Photographic Mountant. Jan. 1. Price 6d. and 1s., or may be obtained in bulk. Blackfriars Photographic and Sensitizing Co., 1 Surrey-row, Blackfriars-road, S.E.

Lumière's Platino-Matt Bromide Paper. In two grades—A for contact, B for enlarging. Price per packet, quarter-plate, 6d.; half-plate, 1s. 1d.; whole plate, 1s. 11d. Fuerst Bros., 17 Philpot-lane, E.C.

APPARATUS.

"Primus" Glass-cleaning Apparatus.* Dec. 31. Price, lantern size, 1s.; quarter-plate, 1s. 3d.; half-plate, 1s. 6d.; whole plate, 2s. 6d. W. Butcher and Son.

"Primus" Transparency Easels.* Dec. 31. Price, lantern size, 1s.; quarter-plate, 2s.; half-plate, 3s.; whole plate, 4s. W. Butcher and Son.

MISCELLANEOUS.

The Card Case Opera Glass. Price, in case, £2 nett, post free 3d. extra. R. & J. Beck, Ltd., 68 Cornhill, E.C.

The Electric Dry Plate is the latest of Mawson and Swan's introductions.

Stock-taking Bargains.—See our prepaid advertisement columns. If you want to sell anything, use these columns.

Lumière's Platino-Matt Bromide Paper is now supplied for enlarging as well as for contact work. The latter is four times the rapidity of the former.

The "Cadett" Special Rapid Plate is announced at 2s. 3d. a dozen for half-plates, other sizes at proportionate prices. The Slow "Spectrum" Plate is also now ready.

Acetylene Lamps, for domestic use, are on the market in France. A descriptive circular, with illustrations of such lamps, is being sent out by M. Gustave Trouvé, 14 Rue Vivienne, Paris.

Fuerst Brothers have appointed T. Donald Watson manager of their photographic department. He will devote special attention to nitrate of silver, chloride of gold, developers, and all other photographic chemicals.

Photographic Brass Work and sundries have been made a distinct speciality by Messrs. Lonsdale Brothers, of Leeds, who have quite recently removed to extensive London premises at 22 Goswell-road, Aldersgate-street.

The Watkins' Development Competition has been decided and the result announced. The first prize of £4 4s. was won by B. J. Edwards, of Hackney; the second, of £2 2s., being awarded to B. E. Edwards, of Highgate.

The Paget Prize Plate Co., of Watford, have published a useful manual on the use of lantern plates. It contains much really valuable information and reliable formulae. We believe it is sent free of charge on receipt of a stamp for postage.

Beck's Card Case Opera Glass is one of the neatest things amongst recent novelties. It folds into a space only 3-10ths of an inch in thickness, and is carried in a flat leather case about the size of a lady's card case. It weighs under 3½ ozs., has excellent lenses, and may be used (when folded) as a magnifier, reading glass, or burning glass.

An excellent mountant for photographs and general purposes was placed on the market at the beginning of the New Year by the Blackfriars Photographic and Sensitizing Co., 1 Surrey-row, Blackfriars-road, S.E. For photographic purposes it is excellent in every respect; it is quite free from deleterious chemicals, will keep indefinitely, and is thoroughly reliable.

A Transparency Easel is the latest thing introduced by W. Butcher and Son. It is made in japanned tin, which packs flat, and when set up forms a rigid desk or easel, which will be found useful for supporting transparencies while retouching or painting them. The glass-cleaning apparatus, by the same firm, is simply a wooden frame with bevelled edges, and a rebate so slight that the top of the glass is raised sufficiently for cleaning while held fast in position.

The Hypo-Solution Bottle (patent applied for) of the Prosser Roberts Co., is a handy line for preventing the necessity of weighing or measuring. The bottle is marked with a number of lines, and is intended to be filled with water to the level of the lowest. Hypo can then be added, and as the level of the solution rises its increasing strength can be read off on the higher lines.

The Pneumatic Painting Machine.—The company floating this machine offered 15,000 of its 30,000 £1 shares for subscription in December last. It is formed to manufacture and sell an air brush which, in its larger form, is driven by an oil engine. It is intended for the painting of large surfaces, such as ships, etc., and its only application to photography (beyond painting wooden studios) would seem to be in the direction of background work.

Postage-stamp Portraits, which seem to enjoy considerable popularity in parts of the United States, are evidently looking up in England. H. A. Hyatt, of St. Louis, whose cameras have done much to encourage this small work in America, tells us that he has had many enquiries from this country, and has sent over a few cameras. He has no special agent in England, but says that Jonathan Fallowfield stocks the camera, and will doubtless supply orders for the pneumatic retoucher, and other special lines of Mr. Hyatt's manufacture.

The Hill Norris Rapid Collodion Plates are still on the market. They are made both for landscape work and lantern slides. The latter, though requiring a somewhat long exposure, give perfect results; all the beauties of wet collodion without its drawbacks.

We have not yet had an opportunity of trying the landscape plates owing to the unfavorable weather at present prevailing in Town, but the firm who sent them (W. Tylar,

High-street, Aston, Birmingham), tells us they require treble the exposure given to gelatine plates.

After development, the after operations of fixing, washing, drying and mounting, occupy but a few minutes, which is a great consideration when making lantern slides in a hurry.

All in search of Bargains, anything photographic, should look at our prepaid advertisement columns (p. xiv.), which this month include particulars of many little odds and ends turned up while stock taking. If you have anything to sell or exchange, why not make use of the same page—(24 words 1s., and 4d. for every additional 8.)

The "Presto" Paper has been the careful study of Otto Schölzig (31 Binfield-road, Clapham, S.W.) for some months past. The latest result of his experiments leaves little to be desired in the way of a rapid printing paper, possessing the glossy character and range of tones usually associated with gelatino-chloride papers. In one of several beautiful examples submitted by Mr. Schölzig, a print has been made at four different exposures; that is, each quarter of the print received two, four, six, and eight minutes exposure respectively to incandescent gaslight—the distance from flame being nine inches. The print shows that either one of the exposures would have been sufficient for securing as much detail and pluck as required, while there is no doubt as to the control over results. A weak solution of Eikonogen is used for development, and the prints, after fixation in hypo, may be toned in either the combined or separate gold-toning bath. Daylight enlargements may also be made on "Presto" paper, which certainly yields prints capable of being toned to any shade possible with albumenized or any of the modern printing-out papers. The specimen prints may be seen in *The Photogram* reading-room, and are well worth inspection.

CATALOGUES.

A NEW CATALOGUE of cameras, lanterns, and cycles, has been received from the London Stereoscopic Co.

THE bulky "Remembrancer" sent out by Jonathan Fallowfield, 146 Charing-cross-road, W., in addition to many other interesting novelties, contains particulars of materials for photo-ceramic decoration. Such a voluminous and regularly distributed price list keeps photographers well abreast of the times.

A SPECIAL circular, descriptive of Cole's patent "Flexible, Rising and Falling Front Camera," is being sent out by the inventor, James Cole, 84 High-street, High Barnet.

WALTER TYLER's great big catalogue of everything for the lantern has come round with the height of the season, and is, as usual, an immense compendium of lists of slides, specifications of lanterns, &c., &c. It is sent for one shilling, from 48 Waterloo-road, London, S.E.

THE fourteenth edition of Taylor, Taylor and Hobson's Lens Catalogue contains prices of the Cooke lenses, series III., a hand-camera lens, and the new standard dust caps. A dust cap of this kind has been wanted for years; it is made of metal, and is intended to be screwed over the back glasses of lenses when not in use, to protect them from dust and injury. In common with all Taylor, Taylor and Hobson's lenses, they are formed with screws to the Royal Photographic Society's standards. Other new features make the possession of this catalogue desirable, even if we had omitted to mention the appendix, "The Principles of a Lens' Action," which has been largely re-written, particularly the parts relating to Astigmatism, Depth of Focus, Curvature of Field, and Intensity or Rapidity.

Correspondence.

The Nude.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM.—I have no wish to enter into any controversy as to the artistic merits of Mr. Collins' picture, but I feel that I must enter a protest against the letter of "A Newspaper Man" in your December issue.

I have the very greatest objection to anything approaching vulgarity, but I quite fail to see how anyone can say that the picture "Ebb Tide" is in any way objectionable. I should certainly not have the slightest scruple as to laying the book upon my drawing-room or any other table. But allowing, merely for the sake of argument, that because of this picture and the two following ones, the book is not a suitable one to put into the hands of "young lads growing up," is it reasonable to ask that a technical magazine intended for thinking men and women should be debarred from giving examples of the work of the day just because the whole of

the book is not suitable for children? Are there not sufficient children's books published already? If there is a demand by all means let us have a *Children's Photogram*, but let it be in addition to, and not in substitution for the present one.

In conclusion let me ask does "A Newspaper Man" allow any of the journals devoted to art to lie on his drawing-room table, for I fancy that even these do not always exclude representations of the nude.

I enclose my card, and am Yours, etc.,

THINKER.

Psychography.—A New Science?

To the Editors: *The Photogram*.

DEAR SIR AND MADAM.—Has it occurred to you *re* the mysterious eye photography that supposing the retina does become feebly phosphorescent after looking at a bright object (which is extremely likely on physiological grounds) it would, on optical principles, project an image at the point originally occupied by the object? For, assuming the focus of the lens to remain unaltered, the retina and object would be conjugate foci of the lens, so that if the plate were placed in the position, or at the distance, of the original object, the projection of a retinal after-image (if such exists) would be quite reasonable. The after-image might exist and be active without being visible, for it would very probably consist of ultra violet rays. I have not, however, had patience to sit staring at a plate in the dark room for three-quarters of an hour. The *crux* is of course experimental, but it may be worth pointing out that the expectations of results are not altogether irrational.

Yours, etc., CHAS. E. BENHAM.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM.—If you admit correspondence on this subject, may I draw your attention to the following cutting from *The Two Worlds*. I know that the article is written by a competent amateur photographer.

"Abnormal images have been obtained on sensitive plates, and in certain cases it has been claimed that some of these images have been thought projections; we have tried again and again to obtain thought images on sensitive plates, with the camera, and in darkness without the camera. We have obtained in the course of our experiments many abnormal images, but have failed utterly to find amongst all these abnormal images, a single instance of a thought picture."—Yours respectfully,

PSYCHOPLASM.



J. R. B.—Your name and address was omitted; you will therefore understand why your letter has not received further notice.

W. ROWLEY.—H. A. Hyatt has at present no English representative, but he would be glad to send you any goods direct, and the cost of delivery here would not be great. He is a perfectly reliable man, so you need have no fear in dealing with him direct.

COPYRIGHT.—By all means demand your fee for the publication of portrait. Bring the matter before the Photographers' Copyright Union, London Chamber of Commerce, Botolph House, Eastcheap, E.C.

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THE PHOTOGRAM

VOL. III.

MARCH, 1896.

No. 27.

Copyright.—This Magazine, as a whole, with its contents, both literary and pictorial, is copyright; and the copyright is registered. Our contemporaries are very welcome to quote from our pages (with acknowledgment), but we propose to protect ourselves and our advertisers against piracy.

The New Light.



REELY a paragraph seemed all that was safe on the subject of the X-rays of Prof. Röntgen, when last we went to press. The reports in the lay press were obviously exaggerated, and obviously incorrect, while the original paper on the subject, contributed to a minor scientific journal of Würzburg, was unobtainable. Before our February issue was published, however, the original paper was to hand, two British investigators had very successfully repeated Prof. Röntgen's experiments, and reported their results to the Royal Photographic Society and the Camera Club respectively, and a mass of information on side-lines was available. The matter was almost sufficient to fill an issue of our journal, and we felt that rather than wait for the present issue and attempt to condense

the matter, it was well to push forward a special issue, which was therefore published at the end of January, under the title of "The New Light." By the 5th of February a third edition, with added matter and illustrations, was printing, and other editions will follow as further successful results are reported. In these circumstances it is unnecessary to treat the subject with any fulness in the present issue.

The amount of attention directed to the whole question of photographing by "invisible light," and of medical and surgical diagnosis by photography, is not the least of the benefits arising from Prof. Röntgen's discovery, though the intrinsic value of the discovery is also very great.

A Crookes' vacuum tube consists of a thin glass tube or bulb, of an indefinite shape and size, but usually pear-shaped, and from three to four-and-a-half inches diameter. Into it are fused two wires that can be attached to an electric battery or intensity coil, so that the electric discharge will pass through the air or other vapor in the tube. This vapor is in a highly attenuated condition, for the tube is very strongly exhausted by means of a vacuum pump. The wire of the negative pole or cathode, terminates in a small metal disc, from which proceeds, when a high-tension current is passed through the tube, a bundle of phosphorescent-like rays, rich in the ultra-violet, and possessing many peculiar properties. The metal disc does not seem to be a necessity to the production of such shadowgrams as have attracted public attention, as in tubes of sufficient exhaustion a discharge from the bare termination of the wire gives the same result.

Hertz and Lenard, in Bonn and Aachen, experimented very fully with the cathode rays, and showed that they were capable of penetrating many substances

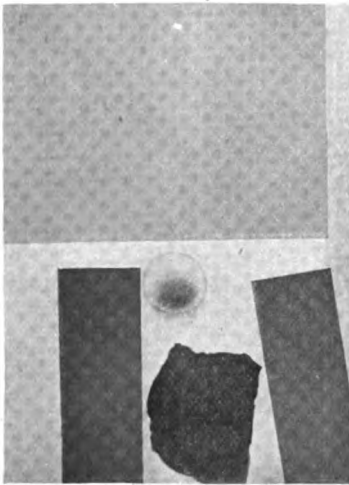
that were perfectly opaque to ordinary light, while some "transparent" substances (such as glass) were relatively opaque to the cathode rays.

Professor Röntgen, experimenting with a Crookes' tube covered with black paper through which no ordinary light could pass, found that phosphorescent substances, if brought near the tube, became luminous. This proved that some force, able to penetrate black paper, and able to excite phosphorescence, was proceeding from the tube. From this point the working out of the whole discovery was a mere question of time and patience.

The X-rays, as Professor Röntgen called the new force, are invisible, they penetrate such substances as wood, black vulcanite, cardboard,

shadowgraphing coins in a purse, metal discs in a wooden box, &c. As the flesh and skin of animals are transparent to the X-rays, while bones are relatively opaque, it is possible to shadowgraph the skeleton within the living flesh, and this power has already been used in surgery to discover diseased bone, etc. As metals are relatively opaque, and even glass is more opaque than the flesh; the X-rays have been used to shew the exact position of shot, and also glass splinters in wounded hands, thus preventing unnecessary probing.

The electrical outfit for repeating the X-ray experiments is rather expensive, whether the electricity is home generated or obtained from the mains. It consists essentially of (a) source of



Aluminium, 1-32in. thick.

Glass, 1-32in. thick. Aluminium lens in brass mount. Glass, 1-16in. thick.
Tinfoil.

Penetrability of various substances to the "X-Rays."



Woman's (living) Hand.

Twenty minutes' exposure.

SHADOWGRAMS BY J. W. GIFFORD.

aluminium, &c., more freely than glass, clear quartz, &c., and they are incapable of being reflected or refracted. Therefore, it is impossible to bring them to a focus. In all these respects they resemble the cathode rays as described by Lenard, but there are the following differences, viz.:—1. The cathode rays can be deflected by placing a magnet in their path, while the X-rays can not. 2. The X-rays have much greater penetrative power in "opaque" substances. 3. The X-rays have much greater penetrative power in air; producing effects at a distance from their source at which the cathode rays seem quite inoperative.

The X-rays have the power of affecting a photographic dry-plate similarly to light. Therefore, if a plate be laid in a box of wood or cardboard, and stood in the path of the X-rays it becomes fogged. If substances impenetrable to the rays are placed between their source and the plate it will show, on development, a shadow, or silhouette of such substances. This explains the possibility of

supply; (b) an intensity coil (which should give a seven-inch spark); and (c) a Crookes' tube. The supply may be the mains or a hand dynamo, costing (say) £25; or ten or a dozen Groves' cells. In any case, the outfit will cost (at the time of writing) from £20 upwards. Many experts are at work on the subject, and the instrument makers are watching it with care, so that even before these lines are issued we may have upon the market a comparatively cheap and reliable outfit. At the time of writing there is a good deal of cheap apparatus that is useless for the purpose; and even with the best of apparatus some of the experimenters have met with naught but failure, for which no cause can be assigned.

Improvement is to be expected at any moment in the direction of considerable shortening of the time of exposure—or, what is equivalent, decrease in the amount of power necessary. The subject is one which we shall continue in these pages, and also much more fully in any future editions of *The New Light* that may be demanded.

Society Life. V.—The London and Provincial Photographic Association.

MR. A. L. HENDERSON begs to announce that he will hold weekly meetings every Thursday, at Ashley's Hotel, Henrietta-street, Covent Garden, W.C., to discuss photographic matters generally. Numerous gentlemen, well known in the profession, will co-operate. Mr. Henderson will, on Thursday next, the 12th inst., at 8 p.m., give a demonstration how to make gelatine plates, with full instructions and formulæ. All interested in the subject, including assistants and amateurs are wanted. Admission free."

The above announcement, which appeared in the advertisement columns of both the *British Journal of Photography* and *The Photographic News*, of May 6, 1881, was the herald of the advent of the organisation which forms the subject of this article.

The meeting was well attended, about forty persons being present, including some of the

for a year, it was felt by those who had been regular attendants at the meetings, that it would be an injustice to him to continue to trespass on his kindness, and the suggestion was made, and warmly taken up, that a new association should be formed to relieve Mr. Henderson from the responsibilities he had undertaken, and to carry on the Thursday evening meetings.

The preliminaries were settled after the usual amount of discussion in such cases, but except in two respects the rules adopted followed ordinary lines. These exceptions were—that the subscriptions should be the lowest that could possibly cover the necessary expenses of management (5s. per annum was the amount fixed upon), and probably in deference to Mr. Henderson's well known fear of "clique," that there should be no elected committee, but that the meeting held on the last Thursday in each month should resolve itself into committee at 9 o'clock. The first hono-



J. E. HODDS,
Hon. Librarian.



PHILIP EVERITT,
Hon. Secretary.



G. W. ATKINS,
Hon. Recorder.

leading lights of photography of the present day. From that date meetings have continued to be held. For a year the whole of the expenses attending the holding of these meetings were defrayed by Mr. Henderson, and they were conducted practically on the lines of those held in the same room on Wednesday evenings, by the Photographic Club, which had then been established about eighteen months. A chairman was appointed at the close of each meeting to preside at the next, the proceedings were duly reported in the photographic papers under the heading of "The Thursday Evenings for Photographers," and, except that there were no officers, no written rules, no subscriptions, and that the membership included everybody in the photographic world who chose to attend, there was little to distinguish the "Thursday Evenings" from the present association, or from many other photographic societies which have come into existence since then.

After having enjoyed Mr. Henderson's hospitality

rary officers were—Trustees: W. K. Burton and W. E. Debenham; curator: A. Haddon; treasurer: W. H. Prestwich; and secretary: C. B. Cutchey.

The last of the "Thursday evenings" was held on June 29, 1882, and the occasion was commemorated by the presentation to Mr. Henderson of a token of appreciation of his kindness, in the shape of a high-class chemical balance by Berthing, the funds for the purchase of which had been raised by subscription.

As the funds would not permit of a continuation of the occupation of the rooms at Ashley's Hotel, new premises had to be found, and the association began its career in the City, at Masons' Hall Tavern, Basinghall street. Although it has thrice since then had to find a new home it has remained in the City, its first move being in 1890, to The Champion Hotel, Aldersgate-street; its second in 1895, to The Raglan Hotel, Aldersgate-street; the last removal being this year to The White Swan Hotel, Tudor-street, New Bridge-street, E.C.

The association has been fortunate in having had but few changes in its officers. The curator, Mr. Haddon, has remained at his original post. The trusteeship have had two changes, the present trustee being Mr. J. B. B. Wellington. Mr. Prestwich filled the office of treasurer until 1889, when it was deemed advisable to join the office of treasurer to that of secretary. Two new officers have been appointed: a recorder, whose duty it is to keep and read the minutes of the meetings, and a librarian. The present recorder is G. W. Atkins, and the librarian, J. E. Hodd. In the secretaryship there have naturally been more changes. In a society like the London and Provincial the office is by no means a sinecure; it requires great ability, considerable tact and the devotion of much time, thought, and labour. The association has been happy in securing the services of men who in all these respects have been able and willing, and it is to the labors of these gentlemen that its present prosperous condition is in a great measure due. The honorary secretaries have been C. B. Cutchey, J. J. Briginshaw, F. A. Bridge, T. E. Freshwater, and Philip Everitt, who holds the office at the present time.

In a career of nearly thirteen years, some



T. E. FRESHWATER,
*Member of Council.**

changes in the rules have been found necessary, but these have not affected the original lines upon which the association was constituted. In 1887, the rules were amended so as to provide for the annual election of a committee, to whom the conduct of the business of the association was to be left.

Of the work done by the association it would be difficult to give anything like a complete account in the space here available. The weekly meetings have afforded ample opportunity for the discussion of every question of interest that has arisen in photographic circles, and it must be said that few such subjects have escaped notice. For a year or so the most engrossing subjects for discussion were those which had a bearing upon the preparation of gelatine emulsion, and a

reference to the published reports of the meetings will show that, at any rate until 1884, there were few meetings at which emulsion topics did not occupy some portion of the evening. The association was strong in emulsion experimentalists, and demonstrations of new methods of emulsion making and modifications of old ones were frequent. Among the names of those who showed practical experiments in these directions are found those of A. J. Brown, W. K. Burton, W. E. Debenham, A. L. Henderson, and Professor Stebbing, of Paris. The development of gelatine plates naturally also received a considerable share of attention, and the use of the potassium and sodium salts in place of ammonia as constituents of the developer, were investigated by several of the members, and the results of their experiments shown. The measurement of the comparative speeds of plates was a favorite subject; while green fog, its cause and remedy, spots, scum markings, iridescent fog, drying marks, and frilling were never-failing subjects for the initiation of discussion. Nearly everything novel in the way of apparatus and appliances of course found its way to the L. & P., and in those early days of gelatine, when most of the apparatus in use had been designed for collodion work, there *was* generally something new in a novelty. Mr. Henderson rarely appeared without something he had designed for the simplification of photographic work, or something designed for another purpose which could be so applied. Mr. Cowan, too, was not often unaccompanied by a specimen of his ingenuity; and A. J. Harrison, and others whose mechanical skill has helped to make the way easy for the present generation of photographers, were frequent attendants at the meetings and exhibitions.

Following the lines of the Photographic Club, there were, in the early period of the association's career, no subjects for discussion announced beforehand, and it was left to the attending members to bring forward matters for the evening's entertainment. Lectures were rarely given, and the papers read were very short, nevertheless, the time at disposal was often found insufficient for the discussion of the topics that presented themselves. Among those whose names are to be met with most frequently in the minutes of the proceedings, in addition to the officers of the association, and those whose names have already been mentioned, are W. M. Ashman, W. M. Ayres, J. Barker, T. Bolas, J. J. Briginshaw, W. Cobb, H. M. Hastings, A. Mackie, J. T. Pearsall, H. S. Starnes, C. H. Trinks, L. Warnerke, and J. B. B. Wellington. Some of the old names are as familiar in connection with the L. & P. as of yore, while it is satisfactory to find that as successors to those whom death has removed, or who, from various causes, have ceased to take an active part in the work of the association, there have been found men, many of whom can be counted as of the younger generation of photographers, whose enthusiasm and ability entitled them to be considered as worthy successors of those whose places they fill.

The first departure from the system of leaving the subject matter of the evening to chance was made in the winter of 1883, when a series of lectures (or, as they were termed, lecturettes), was

* Portraits of Alexander Cowan and A. Haddon have appeared in back numbers of *The Photogram*.

arranged; and it will perhaps be interesting to give the names of the lecturers and their subjects.—"Toning silver prints," by W. M. Ashman; "Avoiding reflections and granularity in copying," by W. E. Debenham; "Instantaneous photography," by W. Cobb; "The limelight and interference," by C. Darker; "Recent experiments in emulsions," by A. L. Henderson, and "Modern developers," by W. K. Burton.

To continue the list of subjects that have been brought before the association by members and others, experts in their own particular line of photographic work, would serve no useful purpose. As far as the literary matter is concerned the photographic press has taken care that the readers of the journals have shared in the good things that have been provided. The present custom of procedure at the meetings is, after a short time devoted to the consideration of minor points connected with photography, raised by members or others present, the inspection of new articles of apparatus and the discussion of questions from the questions box; a paper is then read, or a demonstration given, the subject being followed by a discussion. One evening in the month, called an "open night," is still conducted on the old lines of leaving the subjects to chance, and, during the winter season, an evening a month is devoted to a lantern exhibition.

The association has a style of conducting its proceedings which is uncommon; there is no president, but a chairman is chosen before the opening of each meeting to conduct its proceedings. Those who are regular attendants are selected in turn, but there is no strict rule, and any well-known member who has been absent for a period is sure to have his reappearance celebrated by the post of honor being accorded him. The system has been found to work admirably.

There is the utmost freedom of discussion, and when a point arises upon which there is a decided division of opinion, a commendable plainness and

straightforwardness of language is employed to express the various views on the subject. An L. & P. meeting delights in a warm discussion with hard hitting on both sides, and to speak of some of the discussions that have taken place in past years as "warm," but inadequately expresses their quality.

When there is reason to believe that any of the redoubtable gladiators are girding their loins for a fray, the attendance is sure to be large. The fight is, however, rarely more than a display in the arena, and the antagonists are as good friends as ever after it is over. The association has the utmost antipathy to anything like charlatanism, and more than once has done good service to photography by assisting to expose impostures on the public, and while the members are always ready to recognise the merit of any article or process that is introduced to their notice, whether by a private individual or by the representative of a trading firm, and to accord unstinted praise where deserved; any attempt to pass off as valuable that which will not bear a strict investigation as to its usefulness is sure to fail.

In dealing with the history of the L. & P., its connection with the inception of the Photographic Convention of the United Kingdom should not be passed over. Officially there was never any connection between the two bodies, but the leading spirits of the movement were nearly all members of the L. & P., and the meetings which preceded the first convention at Derby, and at which the organisation was constituted, were held at the rooms of the association.

The London and Provincial has always extended a warm welcome to visitors, and many provincial friends never fail to attend the meetings when in Town. Visitors to this country from abroad also are often to be found there. To be interested in photography is all that is necessary to ensure a cordial reception.

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Architectural Notes for Photographers.

BY HAROLD BAKER.

Photographer to the Archaeological Section of the Birmingham and Midland Institute.

Illustrated by OLIVER BAKER, R.P.E.

IN order that the photographer may make the most of his architectural work, some knowledge of the history and growth of our native architecture is necessary. Such an outline of the subject I propose to give, and in doing so to take my examples chiefly from the "rank and file" of our old buildings, rather than from the more celebrated architectural remains. It is one of the great charms of this kind of study that, in the pursuit of it, one may light upon some gem of ancient art in a remote and unsuspected corner, and I have thought it better to give such specimens of old architecture as any photographer may hope to find, in whatever part of this ancient country he may live.

It will be as well, at the outset, to clear the ground of a few misconceptions. We have become so accustomed to speak of certain periods, or styles of architecture, that many people imagine that there is a hard and fast line between them.

No greater mistake could be made, as each style grew naturally from its predecessor, and was a gradual development, the stages of which can be easily traced. This development was going on all over the country at the same time, although certain local peculiarities are to be found extending over certain districts, the result of special influences, in many cases arising from the almost invariable use of local material, which always had an effect on the style. In a district where timber was scarce, we find stone chiefly used. In a district where timber is plentiful, and good building stone scarce, as in parts of Worcestershire, we find timber and plaster buildings, including even churches, several of which still remain, while others have doubtless been destroyed by fire.

Saxon architecture was partly a rude survival of the Roman occupation and partly original; Norman architecture was a development of Saxon, or rather was grafted upon it; while that of the

thirteenth century, or "Early English," as it is often called, grew out of Norman work; and the highest development was reached in the fourteenth century, or "Decorated" period. A gradual decline set in with fifteenth century, or "Perpendicular" work, and Gothic architecture continued on its downward path through the Tudor and Elizabethan periods, during which latter the "New Birth," or "Renaissance" of classic learning and art on the continent spread to this country, to which we owe that strange medley of mediæval and classic work known as Jacobean. In the Queen Anne and Georgian periods, the last traces of Gothic architecture disappeared. I wish to avoid even the appearance of disparaging any of these styles. Each had its own merits, and was the outcome of the age which devised it.

Another mistaken idea is that Gothic architecture was purely ecclesiastical; but a study of the secular buildings of each period clearly shows that this was not so. The church, the palace, the castle, and the manor-house, were alike built in the style of each period, but varied to serve the purpose for which each building was intended—worship, regal splendor, defence, or convenience.

Pre-historic Remains.

Our earliest architectural remains (if we may so describe them) are the tall upright stones, or "monoliths," such as the King's Stone, near



FIG. 1.—THE KING'S STONE.

Long Compton, Warwickshire (fig. 1), and the circles of large stones, of which Stonehenge is the best known. Examples of the latter are also to be found in Wales and Cumberland, and a complete circle of stones, about six or seven feet high, exists at Rollwright, in Oxfordshire, close to the King's Stone already mentioned. In the same field is another group of five stones, called the Wandering Knights. No approximate date can be assigned to these remains, nor can we do more than conjecture for what purpose they were intended, although it is generally assumed that they were temples, or places of sacrifice. This supposition is, however, strongly opposed by

some of the better informed writers on the subject, for they affirm that these were not Pagan temples, and cannot be of an earlier date than the fourth or sixth century, but are the burial places of great chieftains who fell in battle near, so that they may be said to mark the sites of ancient battle-fields.

The names "Cromlech" (usually given to groups of several stones with one large one on top, forming a kind of table), fig. 2, and "Men-hir" or "Maen-hir" (given to single upright ones), point to their ancient British or Celtic origin; especially as they are more numerous in Wales, Cornwall, and Brittany, the districts into which the Britons retreated from the attacks of the Angles and Saxons.

Roman Buildings.

Of the remains of historic times, the buildings of the Roman occupation are the earliest. These are so few and fragmentary that no description of their architecture is necessary here. They rarely offer much attraction to the photographer, and may, as a rule, be left to the measuring tape and T square of the antiquary. In some cases, however, such as those given below, they are not only better rendered by the camera, but are capable of being made very interesting subjects.

Perhaps the finest are the remains of the Roman Baths, at Bath. At Wroxeter, near Shrewsbury, a portion of the buried city of Uriconium has been excavated, and in the South of England remains of Roman villas, such as tessellated pavements, are occasionally found. Numerous tombstones to Roman soldiers have been unearthed, many with decipherable inscriptions; and some with the representation of a man on horseback carved upon them. At Haddon Hall, an altar to the god of marriage is preserved, and several others have been found at different places. At Leicester there is a portion of a Roman wall, consisting of several recessed arches built of thin bricks; it is considered to have been part of a temple or basilica. Within the walls of Dover Castle is a remarkable tower, which although cased with stone at a later period, is clearly of Roman workmanship; and in London, Chester, and in many other towns, unmistakeable Roman remains are uncovered in building operations, but very rarely preserved.

Anglo-Saxon Work.

Still later come the large crosses that are to be found in some of our churchyards, particularly in Ireland, covered with interlacing ornament, and sometimes with runic characters upon them. In Yorkshire, such remains are not uncommon; and there are several fragments in the porch of Bake-well Church, Derbyshire, which have been found embedded in the walls. In the churchyard there is also a fragment, nearly eight feet high—the head being missing—which dates from the eighth or ninth century (fig. 3). It is covered with a scroll pattern, which shows clearly the influence of Roman work. In the south aisle of Tenbury Church, Worcestershire, there is the head of a similar cross; and at Crophorne and Bredon, in the same county, are the heads of very fine crosses, recently discovered. The cross at Crophorne is

illustrated at fig. 4. At Eyam, in Derbyshire, one of these crosses still remains, in almost perfect preservation. They are to be found in many districts, and form fine subjects for the photographer.

Early Saxon buildings are very rude in character,

resting upon smaller stones (which may be considered rudimentary capitals), formed the head, and were supported by long upright pieces, forming the jambs. Deerhurst Church, Gloucestershire, fig. 5, is a good example of an early Saxon tower, showing that peculiar kind of masonry, called



FIG. 2.—HELSTONE CROMLECH, DORSET.



FIG. 3. BAKEWELL.

having triangular-headed doorways and windows of the simplest construction. Two long stones, set at about the angle of an equilateral triangle,

“herring-bone work,” but having hardly any worked stone or “ashlar.” In the tower there is an exceptionally elaborate double-window of the above construction, opening into the church from an upper chamber (fig. 5). The jambs of the windows, and shaft or square baluster between them, are decorated with flutings, which are clearly copies of similar ornament on Roman columns.

The font is a remarkably fine one; covered with the interlacing ornament already mentioned in speaking of crosses. There is little doubt that such work cannot be of later date than the eighth century. It is probable that the church belongs to the same period.



FIG. 4.—CROPTHORNE.

At Earls Barton, Northamptonshire, there is a fine Saxon tower, of rather later date than Deerhurst, showing the system of “bonding” the

"rubble" masonry (or small stones) with long strips of stone projecting slightly from the wall, which may possibly have been the origin of buttresses. When such work occurs at the corner



FIG. 5.—DEERHURST.

where stones carved with Norman enrichments were used in alterations made in the fifteenth century. Such cases are often very puzzling to the student.

At Stanton Lacy, Salop, there is a large cruciform church, of which the outer walls show many traces of Saxon work, having both "herring-bone" and "long and short" work. On the north aisle



FIG. 6.—DOUBLE WINDOW, DEERHURST.

of a building, the long upright pieces rest upon short horizontal ones, and it is called "long and short" work (fig. 8): it is another indication of

Saxon work. Other fine instances will be found at Barnac, Northamptonshire; Sompot, Sussex; Ropsley, Lincolnshire; Repton, Derbyshire; and Bradford-on-Avon, Gloucestershire.

At Colchester (fig. 9), a curious instance will be found of a traditional arch form being followed even when using a different material; for a tri-angulardoor-head is built, not with two long pieces of stone as at Deerhurst and other places, but with many flat Roman bricks, which were almost as thin as tiles. This is interesting from another point of view, as being a re-use of material obtained, no doubt, from the ruins of a Roman building. There is also some elaborate Norman work in the same town, built of similar material.

Other instances occur at later periods, notably at Gloucester Cathedral,

will be found a good example of a Saxon doorway with a semicircular arch (fig. 10), a form largely used in later Saxon work, showing the beginning of the change to the Anglo-Norman style.

Above the cross, a row of small "guttæ" or drops, such as are found in entablatures of the

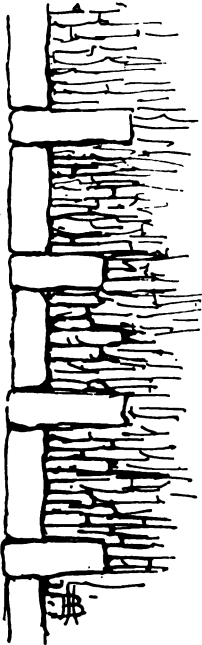
FIG. 8.
LONG AND SHORT WORK.

FIG. 7.—FONT, DEERHURST.

Doric order, shows the lingering influence of Roman work. The long strip of stone on the right of the door, should be noticed. It is similar to those referred to at Earls Barton.



FIG. 9.—COLCHESTER.



FIG. 10.—STANTON LACY.

But, perhaps, the finest and most perfect building of the Anglo-Saxon period is the crypt beneath the chancel of Repton Church, Derbyshire (fig. 11). It has a vaulted roof resting on four circular columns, each having a spiral band twisted round it. The capitals are plain, with the exception of a simple moulding forming an abacus. The roof is a good example of early vaulting, and is of the simplest construction, having plain square-edged arches, without diagonal ribs (which were introduced in the next style). The semicircular arch, in unskilful hands, did not permit of large spaces being vaulted over; hence the necessity for the central columns. The arches are supported at the walls by eight "responds" or pilasters, which seem of different work to the rest of the buildings, and it is possible that they formed part of the older Saxon monastery, which was destroyed by the Danes, in 874 A.D. The four columns and the vaulting were probably erected about 950 A.D. Repton was the capital of the ancient kingdom of Mercia; and it possessed an important abbey, which had been the burial place of several Saxon kings, previous to the Danish invasion.

Few, if any, of our cathedrals, with the exception of Ripon, contain traces of Saxon work; but nearly every county has churches where such work can be studied and photographed.



FIG. 11.—REPTON.

Uranium-toned Enlargements.

By HALL EDWARDS, L.R.C.P., &c.

TAKING into consideration the fact that gelatino bromide paper is the most commonly used one which is available for the production of direct enlargements, it is curious that so little attention has been paid to the production of those warm tones which have of late become so popular. That warm tones are more pleasing to the eye than the black or dull-grey, which are usually obtained in bromide enlargements, is proved by the large demand for carbon enlargements; in the face of the fact that their production entails considerably more labor, and that the cost is many times greater. Bromide prints can be so toned with uranium, as to yield the most beautiful shades of brown and sepia; nevertheless, such toning is rarely attempted by professionals, and has only been practised to a very limited extent by amateurs. The chief reason why uranium-toned prints are unpopular, is the fact that the toning renders the permanency of the image very uncertain. That this drawback can, and will in all probability, be overcome by further research, I feel certain; my opinion being formed (after a large number of experiments) on the curious fact that for some unaccountable reason, one print out of a batch will remain good for years, whilst others commence to fade in a few weeks.

In uranium-toned prints, the tendency to fade, or for the deposit to take on a metallic lustre, is so great, that few photographers care to run the risk of losing their pictures; hence a process which yields most beautiful results is neglected; and they have to rest contented with black or grey tones, although their artistic instincts would frequently lead them to adopt a brown or sepia in preference.

Exposure to air, especially to that which is laden with the fumes of coal-gas, has a most damaging influence upon uranium-toned enlargements; the fading being caused by the presence of ammonia, and the metallic lustre to that of sulphuretted hydrogen. To prevent the action of these injurious gases upon the deposit I have tried many expedients, with more or less success. The most successful method being that of coating the print—after toning—with a solution of slightly acid gelatine. This is applied in the following manner:—A thin solution of hard gelatine, to which a little sugar has been added, is warmed, and made acid by the addition of a few drops of acetic, or of a solution of citric, acid. This is poured into a large developing dish, and when sufficiently cool as not to melt the films, the prints (which should be damp) are floated on the surface, care being taken to avoid the formation of air-bubbles. A sheet of clean glass—the upper surface of which has been rubbed over with French chalk, or a solution of beeswax in turpentine—is now put into the gelatine solution, under the print. The paper and glass are now lifted out together, one corner of the glass being lifted first. The operation should be performed very slowly, so as to allow the superfluous solution to gradually drain away. The glass is now turned over, and examined for the presence of bubbles, and if there are many the process must be repeated; if all is right, it should be laid upon a flat table until the gelatine has well set, when it

can be put in the upright position to dry. If, on examination, there be only a few small air-bubbles present, the squeegee may be lightly passed over the print, so as to drive them out; this, however, I cannot recommend, as it makes the gelatine coating too thin to properly protect the print. If a matt surface is preferred, ground glass must be used. When the prints are dry they are detached from the glass, in the same manner as is adopted in the case of gelatino-chloride prints.

I have in my possession several uranium-toned bromide enlargements prepared in this way, which show no signs of fading, although they have hung upon my walls for over three years. These were mounted and framed with as little delay as possible after their preparation, and were protected from the entrance of air by well pasting the backs of the frames with water-proof paper. Another method of protecting these toned prints is to varnish them, as soon as they are mounted, with two or three coats of celluloid varnish. I have only just lately adopted this method, so that I cannot positively answer for its permanent action; it, however, bids fair to rival my first method. The varnish, which is composed of celluloid dissolved in amyl acetate, is poured over the mounted print, and allowed to drain off in the same manner as is adopted in varnishing a negative; it takes about half-an-hour to dry. The varnish leaves no sign of streaks, or marks of any kind; it is insoluble in water, and is so thin that it has no tendency to make the print shiny.†

Before toning with uranium, every care must be taken to thoroughly wash the prints, so as to remove the last trace of hypo. It is a good plan to dry the prints after washing, and to re-wash them on the following day, previous to toning. Various formulæ have, from time to time, been advised for the preparation of a uranium toning bath: the one I have found to work best, however, is composed as follows:—

Dilute Acetic Acid.	10 %	2 drams.
Dilute Sulphuric Acid.	10 %	1½ "
Sol. Pot. Ferricyanide.	10 %	30 minims.
Sol. Uranium Nitrate.	10 %	1 dram.
Distilled Water.		10 ounces.

The bath should be freshly prepared, and will not keep after it has once been used. The prints are put into this bath whilst still wet; and the dish must be well rocked during the whole time of toning.

Should toning take place irregularly, the finger may be gently rubbed over the surface of the print where the toning is slow; or better still, a tuft of cotton-wool, or a soft brush, may be used for the purpose. Toning should take place fairly rapidly, and when the desired color is obtained, the print should at once be removed from the bath, and should be placed face downwards in a dish of clean water. The water from the tap should be allowed to run upon the back of the print, but care must be taken that it does not run for too long a time

† If the celluloid varnish, as purchased, is too thick to flow with ease, it may be diluted with one-third its bulk of methylated spirit.

upon one spot, or the uranium may be removed before the ferricyanide has been washed out from the rest of the print. It is a good plan to use a spray-producer on the tap, as this to a great extent minimises the danger of washing out the uranium in parts. Uranium is exceedingly soluble in water which contains even a trace of lime, hence, as most tap-waters contain a greater or less quantity of this compound, the operation of washing must be carried out as quickly as possible. The chief difficulty met with is the getting entirely rid of the staining caused by the ferricyanide: this is especially difficult to remove entirely from the high-lights. These sometimes remain stained after all color has disappeared from the back of the prints. The method I adopt for getting rid of this staining is to allow a small stream of water to run directly from the tap upon the high-lights. This soon removes the stain; but the greatest care must be exercised not to carry this operation too far, otherwise, the uranium will be removed from the surrounding parts, and the print spoiled.

To prevent this staining of the high-lights and the back of the paper, many expedients have been adopted by different workers. The most successful is that of placing the wet print upon a sheet of glass, and applying the toning solution by means

of a brush. By carefully adopting this method of procedure all staining of the back of the print may be avoided. After washing, the prints require no further treatment, and may be at once hung up to dry.

Should the prints be over-toned, they may be reduced either by prolonged and careful washing, or by placing them for a few seconds in a very weak solution of ammonia (1 in 10,000), and washing them, directly they are sufficiently reduced, in water rendered slightly acid by the addition of acetic acid. Great care must be exercised in using the solution of ammonia, as, if it be too strong, the whole of the uranium will be removed before it can be lifted from the dish. Should this accident happen, the print, after washing, can be restored; but it will be found to have lost a considerable amount of density during the operation. Cyanide of potassium may be used instead of the ammonia; the same precautions being taken.

Uranium-toned bromide prints, when freshly prepared, are so beautiful, that it is to be hoped these few crude suggestions will lead others to experiment; and that as an outcome, a method of procedure will be shortly forthcoming, whereby their permanence may be assured.

Photography in Fiction.

BY RICHARD W. K. GODWIN.

UNDER this title there appeared an article in the September number of *Scribner's Magazine* of great interest to photographers. The article in question, after a few explanatory remarks, consists of a tale which, instead of being illustrated by artists in black and white as usual from the author's text, is illustrated by no less than thirty-three photograms representing the principal features of the fiction. Each of these has been produced by posing various groups of persons after the manner of *tableaux vivants*, with of course suitable backgrounds and accessories. That this is only an experiment is evident from the writer's words; though he acknowledges that he has discovered several instances in which photograms from life were used to illustrate fiction, and many other instances in which fiction evidently had been adjusted to photograms from life.

From the very title of the subject under discussion, it might be assumed that the photograms are made more important than the letterpress, and this is really the case. They are for the most part admirably posed, and the whole series of thirty-three is distinguished by its uniformity. Any fault of unevenness in the picture would of course be fatal to the success of the experiment. But they are not vignettéd or shaded off in the manner we are accustomed to expect in illustrated fiction, being reproduced square, and with detail to the corners which tends to emphasize the difference.

The *Photogram* in November briefly referred

to an example of this means of illustrating fiction in the editorial notes. A tale will be found in the July number of the *Pall Mall Magazine* which is admirably illustrated by pure photography. I refer to "The Telegram" in the number mentioned, adorned by five photograms, which for faithfully rendering the text will compare with any black and white work that can be produced.

This innovation has already attracted attention, and seems to have given great offence to the art critic of one of our weekly illustrateds. In the issue of *St. Paul's*, for October 19th, there appears the following:—"There appeared in *Scribner's Magazine* last month a form of pictorial agony which will add another source of horror to the much illustrated and vilely illustrated literary man: I mean the illustration of a story by means of photograms from posed groups."

Surely this is a hard criticism, especially when it is considered that the paper which offers it owes its very existence to photography and photographic process.

But photography can outlive all this, and it is to be hoped that the two examples of it I have referred to are but the beginning of a new branch of work. We have the power with our cameras to single out and emphasise any special feature we wish to bring into prominence. And if we can do this, why can we not illustrate fiction? At any rate the successful application of the art-science to this purpose would be one more "way out" of "darkest photography."

Forgeries Detected by the Stereoscope.

A VERY old use of the stereoscope has been the subject of comment in one of the popular publications; and a use which has fallen into such complete oblivion among our professed stereoscopic experts of to-day, that one of these persons appears to regard what was thoroughly established and common knowledge in the time of Sir David Brewster, as both new and untrue.

If two identical impressions from type or from an engraved plate are set in the stereoscope they

The second example is a stereogram pair consisting of [a] similar to the above, and [b] a cast from the same matter after re-setting. Although in re-setting similar spacing was followed as closely as practicable in a reprint, the intervention of dust or other causes have occasioned such difference in the lateral position of the letters, that the stereoscopic result appears as if the letters and words were not all at the same distance from the observer. We may say that no one, though using the same fount of type (Caslon's Long Primer Old

[a] "—the tears that roll
Down the wan cheeks of weary women grow
To gold flakes, fluttering on the fiery floor,
Then whirl away, to swell his horrid store.
And he, the brutal torturer for gold,
Is not, as once, with breast and biceps bare,
That men might know him. From the spotless fold
Of his smooth neckcloth doth a diamond glare."
H. ATTON, in the "*Clarion*".

STEREOTYPE CASTS FROM SAME ORIGINAL.

will unite completely, and the result will be an apparently flat image; but if one be a copy of the other, even a resetting of the type, with spacing as exact to the original as can be made, there will be minute differences—due, perhaps to traces of

[a] "—the tears that roll
Down the wan cheeks of weary women grow
To gold flakes, fluttering on the fiery floor,
Then whirl away, to swell his horrid store.
And he, the brutal torturer for gold,
Is not, as once, with breast and biceps bare,
That men might know him. From the spotless fold
Of his smooth neckcloth doth a diamond glare."
H. ATTON, in the "*Clarion*".

Face), could hope to make such a setting of the above matter as would not show relief with it when stereoscopically observed; indeed, the stereoscope gives a certain means of distinguishing a reprint from the original. People who have

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Down the wan cheeks of weary women grow
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STEREOTYPE CASTS BEFORE AND AFTER RE-SETTING.

dust between the types—which will cause the resultant image to appear unflat in parts, some letters or words seeming to stand up over the level of the paper. Similarly, if an artist makes a copy of an outline sketch, and this be placed in the stereoscope with the original, the two will completely coalesce, unless there is very great difference between them; but such minute difference as even the most skilled copyist cannot avoid will throw some lines into apparent relief, and make them appear like threads at a distance from the surface of the paper; indeed, loosening the quoins and re-locking up will generally bring about such a difference as may be readily detected.

In the first of the accompanying examples [a] we give the impression of two stereotype casts from the same original. If this pair is viewed stereoscopically the impressions blend, and all the words and letters seem as if in the same plane.

[b] "—the tears that roll
Down the wan cheeks of weary women grow
To gold flakes, fluttering on the fiery floor,
Then whirl away, to swell his horrid store.
And he, the brutal torturer for gold,
Is not, as once, with breast and biceps bare,
That men might know him. From the spotless fold
Of his smooth neckcloth doth a diamond glare."
H. ATTON, in the "*Clarion*".

cultivated the art of stereoscopic vision can, of course, distinguish the difference without an instrument. An article on the subject appeared in *The Photogram* last November, p. 246.

Vanity Fair.—Messrs. A. B. Fleming & Co., Ltd., the proprietors of the beautiful picture which was reproduced in our supplement for January, have had a larger heliochrome reproduction of it (14½ by 11 inches). We have received copies of this, printed with a pale French grey border which immensely improves its appearance, and would suggest that those of our readers who care to frame it, may greatly improve our supplement by a French grey mount. This, and many other supplements that we have given, will have great value in a few years time, when early examples of photo-mechanical work begin to be collected.

Art in Portraiture.

WE have taken from *Das Atelier des Photographen* the following notes on perspective in portrait photography, which will be found simply invaluable if carefully considered. It is too often a question which is neglected,



FIG. 5a.

or utterly disregarded by professional photographers:—

By perspective we understand the reproduction of objects in a picture in such a manner as regards form and size that, in looking at the picture, we get the idea of actuality.

Distant objects appear smaller than those of equal size which are nearer, parallel lines appear convergent, or long lines may appear as short bent lines. We may arrange a circle so that it looks like a pointed oval, or even as a straight line. If, however, we were to represent the circle as a line it would be incorrect, untrue, as no one would discover in a line any similarity to a circle. An egg may be so presented to



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.



FIG. 5b



FIG. 5c.

of too short a focus, the optical instrument draws correctly, and it is essential, therefore, to avoid such perspective drawing as is prejudicial to the distinctness of the picture, or the similarity of the portrait.

It is incredible what is done by and how much is wanting in photographers in respect to this. As a diagrammatic example we may take a billiard ball which may represent in outline the human head, and on which are drawn four lines to represent the eyes, nose, and mouth. If we take this ball in three different positions—that is, with different heights of the camera, whilst the ball remains in the same position—we shall obtain the three following pictures. It must be noted that these pictures only differ in that the eye was placed high in fig. 1, in the middle in fig. 2, and low in fig. 3. How much similarity may be lost or gained by false perspective in consequence of incorrect height of the camera has been sufficiently proved. Now the surface of our ball, in spite of the marks, is still level, and how much more will such faults be evident when deep-seated eyes and prominent noses exist? Obviously the height of the eyes is of great importance not only in bust pictures, but also with full or half-length figures. With a low position of the apparatus the figure will appear large, with a high position small.

Numerous, also, are the faults which arise through incorrect perspective from the use of too long a focus. If we

us that, looking at it slantways, it will appear a sphere. We thus see that, although something may be correctly reproduced from the point of view of perspective, yet it may be absolutely unrecognisable and unlike. As now our chief aim is to produce similar pictures, we ought not to be afraid of trouble, and ought to examine the action of perspective a little more closely. Independently of exaggerations in the perspective proportion of size by the use of lenses

again take our ball as an example, fig. 2 shows it as seen from a long distance; fig. 4 when viewed from a near point. In fig. 2 the mouth is small and the eyes are close together; in fig. 4 we have the opposite, the mouth is broad and the eyes are displaced at the sides. Fig. 5 illustrates the above. There

is still another fault of perspective we must mention, and that is the circular distortion of the lens towards the edges. With lenses which actually only give the middle of the picture sharp this seldom appears. It is different, however, with so-called group and wide angle lenses. The objects which are found at the extreme margins are broadened in the direction of the radii proceeding from the centre of the picture, and thus



FIG. 6a.

distorted pictures are formed. This fault, however, should not be ascribed to the lens, but to its incorrect use.

Whilst now, in one respect, perspective gives everlasting causes of failure, it is, on the other hand, useful in obtaining by its aid desired optical effects. We can make a nose or neck appear short or long, a face longer or rounder, a figure short or slim, stout or slender, and the optical illusions of perspective, moderately applied, may be of great service to us in the eyes of the public, whilst exaggerated perspective may easily earn derision for the inexpert photographer.

The proprietor of a puppet show wanted his troupe photographed, and told me that although they had been frequently photographed in first-class studios, yet he had never been satisfied with the result, as his little people always looked too big, although the figures in the picture were actually small, and they had been placed on chairs, which also helped to make them look small. I placed the little figures on the ground, and set the

camera fairly high, about 4ft. 6in., so that my point of sight was higher than the puppets, and the proprietor was extremely satisfied with the result. In conclusion, we give, as a practical illustration of what has been said, the picture of a lady taken from three points of view. The three heads (fig. 5) were taken with the same lens:—(a) at a height of 4ft. 6in.; (b) at 3oin.; and (c) at 4oin. The picture which appears correct is undoubtedly *c*, as it appears to have slit-shaped eyes, narrow lips, a broad mouth, plump nose, broad jaw, and short neck; in *b* we see the upper lip too broad, the nose snubby, the neck right.



FIG. 6b.

As an example of the use of too short a focus lens, fig. 6 is an exaggerated example; *b* was taken with an aplanat of 3oin. focus. The painful distortion in *b* is obvious; the whole face appears swollen, the ears receding, the nose and mouth too broad, the eyes too far apart; on the other hand, *a* has the correct proportion.

• • •

Canadian Copyright seems in a fair way of being satisfactorily settled, as the draft bill submitted at the London Chamber of Commerce, on January 10th, is on good lines. Copyright in works of art can be registered and secured by depositing photograms thereof—either in Ottawa or London (England).

The Autocrat of the Workroom.—Collodio-Bromide.

NOTHING gives such perfect transparencies, with so little trouble, as collodio-bromide emulsion. Some years ago I adopted a formula that was given before one of the London societies, and was so well pleased with it that I have used it ever since. In the original formulæ, methylated alcohol was recommended as one of the solvents, but since the introduction of the "new" methylated spirit I have preferred to use pure alcohol. The formula stands thus:—

- a. Pyroxiline † (high temperature), 1 dram.
Alcohol 3 ounces.

Methylated sulphuric ether .. 2½ "

Put the pyroxiline in a ten ounce bottle, add the alcohol and then the ether; shake until dissolved.

- b. Ammonium bromide .. 65 grains.
Citric acid 5 "
Water 1½ drams.

Dissolve in a test tube over a bunsen burner, and then slowly add—

- Alcohol 1 ounce.

When well mixed, pour the mixture into a.

- c. Silver nitrate 100 grains.
Citric acid 5 "
Water 2 drams.

Dissolve in a test tube over a bunsen burner, then remove it to the dark-room and add it, a few drops at a time, to a b.

This may be done by ruby or yellow light, but actinic light must on no account be admitted. The collodion (a b) must be well shaken each time after the addition of a few drops of c, until the mixture is complete. The bottle of emulsion must then be well corked, and wrapped in plenty of brown paper to exclude all light, and shaken at short intervals for an hour or so. It must then be allowed to stand for a day before washing.

The emulsion, when ripe, is next to be poured into a porcelain tray (to a depth of about half an inch) and allowed to evaporate for about twelve hours. It is a good plan to do this at night, putting the tray into a large light-tight cupboard; of course, the solvents must not be allowed to evaporate near a fire, or naked flame, lest an explosion occur. In twelve hours the emulsion may be cut into quarter-inch squares, with a silver or bone knife, and put to soak in a stoneware jar full of water. The water should be changed three or four times, at intervals of half-an-hour, and it is a good plan to occasionally squeeze the lumps of emulsion in an old cambric handkerchief when changing into clean water. When sufficiently washed, the emulsion must be squeezed as dry as possible in a piece of dry cambric, and then immersed in enough alcohol to cover it. This must be done three times in all, in order to remove every trace of water, which would otherwise cause "crapey" markings.

The emulsion must next be put into a ten ounce bottle, when four ounces of alcohol, and four ounces of methylated sulphuric ether must be added. The bottle must then be vigorously shaken until the emulsion is dissolved, when it is

ready for filtering through absorbent cotton (previously slightly moistened with alcohol) into another bottle, which *must be* quite clean and dry, and provided with a sound cork, free from dusty holes. In this condition the emulsion is ready for use, and will keep indefinitely if secluded from light.

When coating plates, it is well to pour the surplus into *another* bottle, in order to avoid carrying particles of foreign matter into the main bulk of emulsion. This surplus may be periodically filtered back into stock. Should the emulsion become too thick through evaporation of the solvents, it may be thinned down by adding more as required. The following are about the correct proportions to allow for the more rapid evaporation of the ether:—

- Ether 2 parts.
Alcohol 1 part.

The glass plates should receive a safe-edging of indiarubber solution to prevent the film leaving the glass during development.

After the plates are coated, they can be allowed to dry spontaneously in an ordinary grooved plate box, or may be dried by heat. For the latter purpose a hot plate of iron covered with a sheet or two of blotting paper answers admirably; a hot brick is almost as good. When exposing these plates in contact, care must be exercised in order to avoid injury to the film. It is so extremely tender that the least slip will be fatal.

The exposure necessary, in contact with a clear negative of average printing density, about eighteen inches from a Bray No. 5 gas burner, will be from one to three minutes. If the negative is at all yellow, the exposure must be considerably increased.

The following is a reliable developer:—

- a. Pyro 4 drams.
Sodium sulphite 2 ounces.
Citric acid 50 grains.
Water to 9 ounces.
b. Sodium sulphite 1 ounce.
Potassium carbonate 1½ ounces.
Water to 9 ounces.
c. Ammonium bromide 2 drams.
Water to 9 ounces.

For use, mix equal parts of a, b, and c; one dram of each will be ample for a quarter-plate.

After exposing a plate, it must be held by one corner and covered with alcohol, which must be allowed to permeate the film for about half a minute or more; the plate must then be well rinsed under a tap until all greasiness has disappeared and the water flows easily over the surface. The developer is then poured on and off the plate—holding the plate in one hand and the graduate in the other. In about a minute, development will be complete; then rinse and place in a weak hypo bath, about two ounces to the pint.

The image will soon clear, and may then be washed under the tap for about three minutes and dried over a lamp or in front of the fire.

The Autocrat.

† I like Anthony's or Scovill's gun cotton, sold by Fallowfield. Ordinary surgical pyroxiline is of no use for the purpose.

Reversed Negatives.

THE subject of reversed negatives, obtained by a single printing, seems to be attracting much attention in the French photographic press just now. The question is of great importance in connection with carbon printing and photo-mechanical work, and the following abstracts of the different methods described may prove useful to those engaged in these branches of photography:—

In a paper read before the *Société Française de Photographie*, G. Balagny, after many experiments on all the principal processes, recommends the method of two exposures, as proposed by Biny. Glass plates should not be used, owing to the reflection from the back, much better results being obtainable on paper films. The negative to be copied is placed in a frame in the ordinary way, and exposed to light reflected at an angle of 45° . The film is placed behind the negative, and subjected to the action of this diffused light for a length of time that will ensure the development of the image right to the back of the plate. The following formula is used in developing:—

Water	1 oz.
Sulphite of soda	125 grs.
Hydroquinone	10 grs.

To develop, take—

Of the above	3 oz.
Water	3 oz.
25% Carbonate of soda solution, ..	2 oz.
10% Bromide of potassium ..	$\frac{3}{4}$ oz.
Methylated alcohol	2 oz.

The addition of alcohol is always necessary when developing paper films. The development is allowed to proceed slowly until a dense *positive* is obtained, and it is necessary to push the development until the image has pierced right to the back of the film. This is most important.

After development the film is washed until the greasy appearance, due to the presence of alcohol, has disappeared; the film should be left in running water for several minutes. The film is then picked up with wooden tongs, and squeezed face upwards into an ebonite dish, and exposed in this condition to the diffused light of a window for ten or twenty seconds. It is important that all traces of developer should have been eliminated from the film before allowing the light to fall upon it. The length of the exposure can be judged from the appearance of the film, the whites changing from pale green to whitish grey.

The plate is now taken to the dark room, washed, and plunged into the following bath:—

Water	1 oz.
Bichromate of potassium	5 grs.

When completely dissolved, add

Commercial nitric acid	3 drs.
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This bath is weaker than usually recommended, but a very small quantity of bichromate suffices. The action is to oxidise the silver, which is converted immediately into nitrate by the nitric acid, and dissolved, the image assuming a weak brick-red appearance. The film is allowed to remain in the bath until the black tint of the positive image has disappeared. At this moment there only remains in the film the quantity of bromide of silver necessary to furnish the negative image.

To allow of the plate being easily re-developable, the following conditions are necessary:—(1) The blacks of the original positive must have been completely eliminated. (2) The back of the film must not have been touched by light during the second exposure, whence the necessity for placing the film on an ebonite plate or dish during this operation.

When the bichromate has been eliminated by thorough washing, the following bath is used for re-development, which is very energetic:—

30% solution of anhydrous sulphite	
of soda	5 oz.
Diamido-phenol	8 grs.

After development the film is washed rapidly, and soaked for five minutes in a 5% bath of chrome-alum. Then it is fixed with hyposulphite, washed, and treated in the usual way.

The diamido-phenol and bichromate baths should only be used once, but the hydroquinone bath may be used indefinitely if strengthened from time to time. The dark-room lamp should be provided with yellow and green glasses, to allow of observing the effect of the bichromate, which cannot be judged in red light. Plenty of wash-water should be used all through the operations, and it is most important that the film should never be touched with the fingers.

An account is given in *La Photographie* of the method of M. Lansiaux for making reversed negatives direct from the originals by over-exposure. Magnesium flash-light is used at a distance of about four to six inches from the printing frame; an ordinary plate is placed under the negative, as if making a positive on glass, but after development a reversed negative is produced. The best developer is an old slow bath of hydro-said to be very clear and vigorous, in contrast to the positives on glass made by the ordinary exposure, which are said to be always weak and quinone. Daylight should never be used, on account of its uncertainty. The density of the over-exposed plate can be influenced by prolonging or shortening the development, in the same way as with an ordinary negative. The weaker the light and the slower the plate, the softer will be the resulting negative; but a strong light and a rapid plate yield a hard negative. The intensity of the image is directly proportional to the amount of light, a double flash yielding a very vigorous image. By masking different portions of the plate with red glass during exposure, M. Lansiaux has obtained on the same plate every gradation, from a positive to a negative.

In another method, described in the *Bulletin de la Soc. Navraise de Photographie*, a gelatinobromide plate is exposed, under a negative in the printing frame, to bright sunlight for three or four seconds, and then developed. Pyrogallol acid is recommended as a developer, and a reversed negative, superior in vigor to the original, is obtained.

• • •

Acetylene.—Read, Holliday & Sons, Limited, of Huddersfield, are putting upon the market an acetylene gas generator, which is the invention of J. H. Exley of the same town.

Obituary.

It is with sincere regret that we record the death of Washington Irving Adams, founder of *The Photographic Times*, and president of the Scovill-Adams Co., which occurred on January 2nd. Mr. Adams was born in New York City in 1832: he entered the service of the Scovill Manufacturing Co. in 1858, and rapidly rose until in 1878 he became agent of the Company with entire charge in New York. In 1889, he was made president, treasurer, and manager of the Scovill & Adams Co., who took over the photographic business of the Scovill Manufacturing Co. He

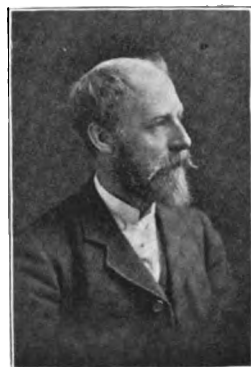
Ely Beach, one of the members of the firm of Munn & Co., the proprietors of *The Scientific American*. His death occurred at the age of seventy years, after a severe attack of pneumonia. The deceased gentleman will long be known by his many important inventions, the most notable being the famous Beach Hydraulic Shield. By means of this shield, the International Tunnel under the St. Clair River, between Canada and the United States (as well as a system of underground railway in New York, and other important tunnels) was successfully driven without influx of water.



W. IRVING ADAMS.



ALFRED ELY BEACH.



JOHN ADAMSON, JUNR.

was for many years chairman of the Executive Committee of the National Photographic Association of America.

The Glasgow Photographic Society have to mourn the loss of two regular attendants, in the persons of two brothers, Andrew and William Mactear. Both gentlemen died on January 17th, —Andrew in his 80th, and William in his 74th year.

We regret to announce the death of Mr. Alfred

Mr. Beach was the father of F. C. Beach, Editor of *The American Amateur Photographer*.

Death has also deprived us of one of our foremost marine photographers in John Adamson, jun., of Rothesay, who died in the prime of his manhood on January 8th. The firm of Adamson and Son has for years been noted for yacht and other marine studies, the deceased gentleman and his little steam yacht being familiar objects on the Clyde.

Editorial Notice.

Contributions are solicited from all who have facts or new ideas to communicate. They must be concise; brief, if possible, and written on one side of the paper only. The sheets should be fastened together, and the contributor's name and address on one of them. Contributors must say whether they expect payment for their matter or not. Unaccepted contributions will be returned to senders if a stamped, addressed envelope accompanies them for that purpose.

The roughest of diagrams (so long as they are intelligible to us) may be sent, and will be re-drawn by our staff.

Payment is made, when required, at the rate of 15s. per page. Short notes are only paid for by special agreement. Contributions of special importance, and those that involve original research, are entertained on special terms. Diagrams, when sent as unfinished sketches, are measured up in the page as matter. Drawings ready for reproduction are subject to special agreement.

Unless Payment is distinctly asked for, we accept all articles on the understanding that the usual compli-

mentary copies of the magazine will be considered sufficient honorarium.

A Free Reading-room is open during office hours. The world's photographic, printing trades and kindred journals, filed. Reference library, lavatory, dark-room, etc. On Wednesday evenings during the winter months (October to March inclusive) the room is open until nine o'clock.

Hours of Attendance.

Members of the staff can always be seen at the office by appointment. Otherwise the attendance is uncertain. As far as possible, the following hours will always be spent at the office, and those who can do so are specially requested to call at these times:—

H. Snowden Ward	...	Daily, 11 a.m. to 12.30 noon.
W. Ethelbert Henry	...	Monday, Wednesday, and Friday, 11 a.m. to 12.30 noon.

Always send enquiries by letter, if possible, in preference to personal call.

The Office is open for business from 9 a.m. to 6 p.m.; Saturdays, 9 a.m. to 1 p.m.



On the 1st of February we sent the interest on *The Photogram* debentures, to all holders. We trust this general acknowledgment and thanks will be accepted by those who sent friendly letters and useful suggestions in reply.

Awards in Competition Nos. 4, 5 & 6.—As we go to press before the closing dates of these competitions, the awards will be published in our April number.

SOCIETIES' PRIZES.

Present Scoring—

Society.	Posits
Edinburgh Photographic Society	1½
(Won by Miss Christian H. Curle.)	
Leeds Camera Club	½
(Won by Morris May.)	

Competition No. 7.—We offer prizes of £1 is. for the best, and 10s 6d. for the second best set of three photographs (landscape, seascape, or architectural, with or without figures), taken in the district of Shrewsbury. The last date for receiving competing prints is March 31.

Summer Competition.—Similar prizes are offered for similar photographs in other districts of Britain, as follows:—

No. 8.—Views in Scotland (within 50 miles of Edinburgh). Closing April 30, 1896.

No. 9.—Views in Yorkshire. Closing May 31, 1896.

No. 10.—Views in Warwickshire. Closing June 30, 1896.

No. 11.—Views in London (within seven miles of G.P.O.) Closing July 30, 1896.

The photographs must all be of subjects accessible to the public, and preference will be given (all other things being equal) to subjects having some historical or literary interest.

A Pictorial Monthly Record.—Some time ago, one of the best known photographic exhibition judges stated that it would be a very great help to judges and also to exhibitors if all the medalled pictures could be reproduced in miniature in one of the photographic journals. The suggestion is that the reduction should be so great that the little illustration would be merely a memorandum of the lines, composition and general effect of the picture. Such a memorandum, we are assured, would be valuable to the judges in comparing the standards of various works more easily than can be done by unaided memory. It would help the exhibitor in various ways—by indicating the class of work approved by competent judges, by preventing those coincidences that often give rise to suggestions of plagiarism, &c., &c.

Will you kindly give us your opinion? If a sufficient number of exhibitors are willing to support the suggestion, we will undertake the matter forthwith. As the reproduction of such a large number of pictures will be very expensive, we cannot entertain paying fees for the right of

reproduction in this diminutive form. The copyright of the authors will be in no way affected. If the idea is carried out, we shall propose to give a key list of the names and addresses of the artists, sizes of the pictures, prices at which copies are offered (framed or unframed), and whether the copyright is for sale. Early suggestions will very greatly oblige.

Our Illustrations.—The initial portrait is from a photogram by Wm. Gill, of Colchester; the portrait of J. E. Hodde is by H. Vandyck, that of Philip Everitt by Cybb & Co., and that of G. W. Atkins by Arthur Weston. To all these gentlemen we tender our sincere thanks. Other illustrations are acknowledged elsewhere.



The Traill Taylor Memorial is being specially taken up by several societies, whose secretaries are making special collections amongst the members. The fund amounts, at the time of writing (February 10th), to £170.

Lady Artists.—Art photography is to form a feature of the Exhibition of the Society of Lady Artists, 1896. Particulars of the photographic section may be had on application to the secretary, Miss Partridge, 9 Nottingham-place, W.

Psychic Photography.—*Light*, of February 1st, contains an offer of £100 for a genuine spirit photogram. The editor says, "Truth-Seeker has assured us that his friend will, under the circumstances, be not merely content, but really pleased, if he should lose his money."

Cardiff Exhibition.—The International Exhibition at Cardiff is to have an important photographic section. The show is open for six months. The awards are very liberal and the arrangements exceedingly reasonable. The secretary is T. H. Faulks, 127 Bute-road, Cardiff.

One-Man Show.—The Camera Club has resumed these pleasant and exceedingly interesting exhibitions, and made a very wise choice in selecting for January the work of Colonel Gale. A collection of about 100 pictures very fully represented this gentleman's work, and made a most attractive show.

Charles Sweet, of Rothesay, is a good example of success in photography. Commencing business with only £20 he has worked his way until recently he has been able to build and equip a studio, which in many respects is novel. The building is of three storeys, the top one consisting of a gallery 40ft. x 15ft. with a dark-room 15ft. x 10ft. One of the novelties of the place is a specially arranged "resting" room, in which customers visiting Rothesay from a distance are to be supplied with light refreshments, before going into the studio. Mr. Sweet hopes to be able in this way to get rid of the weary expression which often comes to sitters, especially in the hot summer time.

Stereophotomicrograms. — Under this somewhat awkward title, Frederick Iles, of Birmingham, introduced to the Royal Photographic Society one of the most interesting subjects that it has considered for some time, and we are glad to be able to reproduce three of his results. Not content with the photomicrograms

of a very interesting optical illusion. The only difference is that in one case the shadow falls from the top and in the other from the bottom of the illustration, and the effect (to most eyes) is a complete reversal of the appearance of relief. Some people cannot see this at once, but we think they will do so if they turn the page upside down.

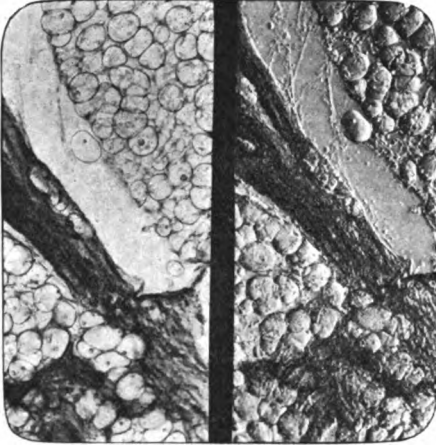


FIG. 1.



FIG. 2.

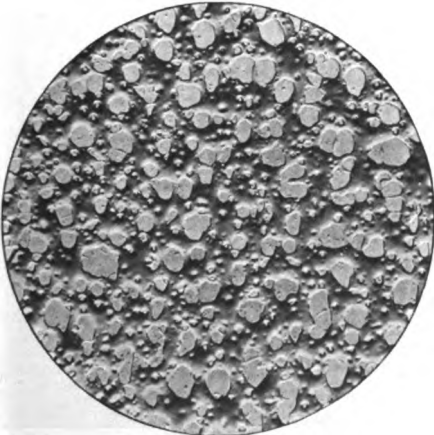


FIG. 3.

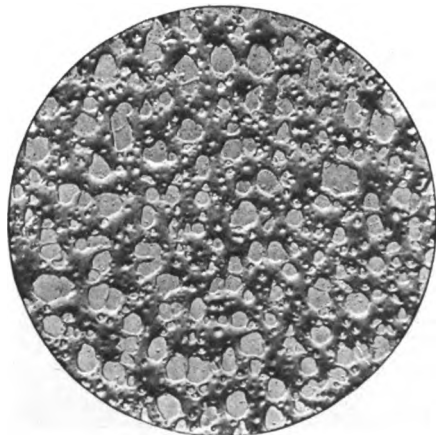


FIG. 4.

Stereophotomicrograms.

WE REGRET that in a portion of the edition the block from which fig. 4 (page 67) is printed, has been inadvertently reversed by the printers. This slip gives the two blocks in their proper positions.

as will also an apparatus for photomicrography, with such effects of lighting as are reproduced. The sole wholesale agent for apparatus and materials is W. Tylar, of Birmingham.

Some fair examples of amateur portraiture appear in *Hearth and Home*. They are the prize winners in competition No. 47 of the "Photographic Guild."

The Press Supply Syndicate has just been formed for the purpose of acting between producers of interesting photograms and sketches, and the illustrated journals in which such sketches are reproduced. The syndicate has its offices at 222 to 225 Strand, W.C., and point out with great reason that its own staff being on the spot can offer the same subject to half-a-dozen or a dozen papers in the course of a morning, so that it gives every possible facility for disposing of work that may be rejected by the three or four papers, but accepted with pleasure by another. As the syndicate is worked on the basis of no charge unless successful, it seems likely to be useful to photographers, who would do well to send for a prospectus.

Novelties at the R.P.S.—The Royal Photographic Society was favored with two distinct and very successful novelties during January. On the 14th, Birt Acres showed in the lantern the results of the kinetoscope, or kinetoscopic work. All the actions of the German Emperor reviewing his troops, a pair of boxers in the prize ring, and several similar subjects were wonderfully well shown upon the screen; but the most successful effect, and one which called forth rounds of applause from the usually placid members of the "Royal," was a reproduction of a number of breaking waves, which may be seen to roll in from the sea, curl over against a jetty, and break into clouds of snowy spray that seemed to start out from the screen. The other novelty was introduced after the photo-mechanical meeting on the 21st, by J. W. Gifford, of Chard, and consisted of some of his results obtained by the new X-rays.

Royal Photographic Society. — The following is the new Council:—

President:

Capt. W. de W. Abney, C.B., F.R.S., &c., &c.

Vice-Presidents:

The Rt. Hon. The Earl of Crawford, K.T.

Sir Henry Trueman Wood, M.A.

Chapman Jones, F.I.C., F.C.S.

Thos. R. Dallmeyer, F.R.A.S.

Treasurer: George Scamell.

Council:

Thomas Bedding.	T. C. Hepworth, F.C.S.
T. Bolas, F.I.C., F.C.S.	F. Hollyer.
F. A. Bridge.	A. Mackie.
James Cadett.	J. Sinclair.
F. P. Cembrano, junior.	J. Spiller, F.I.C., F.C.S.
Edgar Clifton.	J.W. Swan, M.A., F.R.S.
Alexander Cowan.	E. J. Wall.
W. E. Debenham.	Paul L. Waterlow.
W. England.	Horace Wilmer.
J. Gale.	Leon Warnerke.

The secretary and librarian will be appointed by the council.



1. "Photography and Architecture." By E. MacDowel Cosgrave, M.D. F.R.C.P.I. Price 6d., post free 7d. London: Percy Lund & Co.
2. "Indoor Photography." By Bertha M. Lothrop. Price 6d., post free 7d. London: Percy Lund & Co.
3. "Die Kunst des Vergrösserers auf Papiere und Platten." By Dr. F. Stölze. Price 6s. Published by Wilhelm Knapp, Halle A/S.
4. "Modern Magic Lanterns and their Management." By R. Child Bayley. Price 1s., post free 1s. 2d. London: L. Upcott Gill, 170 Strand, W.C.
5. "Lehrbuch der Praktischen Photographie." By Dr. Adolf Miethe. Price 10 marks. Halle A/S: Wilhelm Knapp.
6. "Le Salon Photographique Belge, 1895." Second Edition. Price 1fr. 50. Brussels: Roland and Bavier, 168 Boulevard Anspach.
7. "Photographic Mosaics, 1896." Edited by Edward L. Wilson. Price 50 cents., post free 60 cents. New York: Edward L. Wilson, 853 Broadway.
8. "Pictorial Photographs: A Record of the Photographic Salon for 1895, in Photogravure." By Walter L. Colls. Price £1 1s. and upwards. London: Kegan, Paul, French, Trubner & Co.
9. "Bromide Enlarging." By S. Herbert Fry. Price 6d., post free 7d. London: Jonathan Fallowfield.

"**The New Light**," a special issue of *The Photogram*, can be obtained from any photo-material dealer or newsagent, or from our publishers. Price 3d., post free 4d.

"**The Art Journal**" for February gives an article on "Picture-making," by F. H. Worsley-Benison, with three reproductions of photographs by the author.

Competition proceeds apace, and *The Amateur Photographer* has been practically revolutionised in January. Its issue for the 20th introduced the principle of printing colored illustrations in the ordinary pages which is, apparently, continued. The issue for January 31st includes, not only a literary supplement, but also a supplement of five half-tone illustrations.

The New Light has made the photographic papers unusually lively. In the week ending February 1st, *The Review* gave a couple of Mr. Campbell Swinton's results, *The News* gave a couple of results by members of its own staff, and *The Amateur* gave, perhaps, the most interesting illustrations of all, showing bone construction of the wing of a fowl and the human hand, from results by Dr. Slaby, of Charlottenberg.

The Magic Lantern, though so generally used now-a-days, has hitherto been neglected by authors. Few reliable works on the management of the optical lantern are obtainable, it is therefore with much pleasure that we note the introduction of a well-written text book on the subject (4), by R. Child Bayley, assistant secretary of the Royal Photographic Society. This book treats of the subject in a masterly manner, and we can strongly recommend it to our readers.

A little booklet professing to deal with photography and architecture (1) is not likely to

be of any particular use to photographers, although it may possibly be interesting to a few architects or archaeologists. Most of the illustrations are far from excellent, a terrible want of perpendicularity being conspicuous in many. There is one warning given to photographers, and that is a terse one that can easily be remembered; we quote it in full:—"a piece of elastic to hold the bellows forward will generally be required to prevent the pictures being cut." But the author does not explain *why* the pictures are likely to be "cut."

We briefly announced that Walter L. Colls was producing an album of the works of the '95 Salon. We can now give the highest possible commendation to both his selection and his printing (8) of no less than twenty gems of the exhibition. Mr. Colls' artistic taste, and his ability as a photogravure worker are so well known as to make it almost superfluous for us to comment upon his work. There is only one little complaint that we feel inclined to make, and that is in one case

two subjects are printed on the same sheet. The collection is issued in a cloth covered portfolio, and accompanied by a few words of preface.

The Delightful Souvenir of "Trilby," that was recently given to those who visited the play, is a good example of how a professional photographer may make use of process work. The original negatives are by Mr. T. C. Turner, of London and Hull, and the portraits of the different characters are printed in photogravure, by Virtue & Co., the whole being bound up in an attractive portfolio. We have taken the liberty of making some extracts from the letter by which Mr. Turner accompanied the souvenir sent to us, although the letter was not intended for publication. We feel sure that it is a suggestion by which many a photographer might well profit. We understand that the souvenirs are on sale.

[Owing to extraordinary demands upon our space, we regret that we are compelled to hold over several notices from "Prints" column.]



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

Thos. Illingworth & Co., Willesden Junction.
The Electro Photo Company, Fleet Street.
The Cardiff Photographic Society, Cardiff.
The Prosser Roberts Co., Camberwell.
The Bazaar, Exchange and Mart, Fleet Street.
J. J. Hicks, Hatton Garden.
J. Lizars, Glasgow.
Marcus Ward & Co., London.
J. Day, Dewsbury.
B. J. Edwards & Co., Hackney.
The Cresco Fylma Co., Ltd., Sherborne Lane.
Cadett & Neall, Ashted.

New Goods, &c., Advertised.

Ross-Zeiss and Ross-Goerz Lenses. Ross & Co.
Cooke Lenses. Taylor, Taylor and Hobson.
"Something New." The Thornton-Pickard Co.
The "Binocular" Cameras. London Stereoscopic Co.
Photo Engraving. Carl Hentschel & Co.
"Sap" Sensitised Albumen Paper. Electro Photo Co.
International Photographic Exhibition. Cardiff Photo Society.
Enlargements. Thos. Illingworth & Co.
Photographic Novelties. The Prosser Roberts Co.
Photo Competitions. The Bazaar, Exchange and Mart.
The Pocket Kodak. The Eastman Co., Ltd.
Crookes' Tubes. J. J. Hicks.
The Warnerke Process Tissue. Penrose & Co.
The "Challenge" Cameras. J. Lizars.
Thomas's "A1" Plates. R. W. Thomas & Co.
Albums for Unmounted Photographs. Marcus Ward & Co.
Day's Portable Stereoscope. J. Day.
Edwards's Plates and Films. B. J. Edwards & Co.
"Argura" Paper, &c. The Cresco Fylma Co.
"Cadett" Lightning Plate. Cadett & Neall.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk (*) indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

"Otto" and "Presto" Paper. Revised prices. Sample packets, any size, 1s. each. Quarter-plate, per gross, 3s. 9d.; half-plate, 7s. 9d.; whole plate, 12s. Otto Schölzig, 31 Binfield-road, Clapham, S.W.

Adjustable Picture Frames.* Jan. 16. To hold twelve half-plate prints, 1s. each; twelve quarter-plates, 9d. each. To hold one half-plate or quarter-plate, 2d. each. Intermediate sizes at proportionate prices. Top brackets, to fit any frame, at 1½d. each extra. The Pallion Sawmills Co., Sunderland.

Gelatino-Bromide Plates. Reduced prices. Ordinary and instantaneous, quarter-plate, 1s. 6d. Drop shutter, special, quarter-plate, 1s. 9d. Other sizes in proportion. Wratten and Wainwright, 38 Great Queen-street, W.C.

Thomas's "A1" Plates. Feb. 6. Prices: Quarter-plate, 1s.; half-plate, 2s. 3d.; whole plate, 4s. 3d. per doz. R. W. Thomas & Co., Ltd.

Thomas's "Thickly-Coated A1" Plates. Feb. 6. Prices: Quarter-plate, 1s. 6d.; half-plate, 3s. 6d.; whole plate, 6s. 6d. Other sizes in proportion. R. W. Thomas & Co., Ltd.

Thomas's Universal Developer. Feb. 6. Price, in cased bottle, with full directions for use: Half-pint, 1s. 6d.; pint, 2s. 6d.; postage extra. R. W. Thomas & Co., Ltd., Pall Mall Factory, Thornton Heath.

Higgins' "Photo Mounter Brush." Price 4½d. and 9d. Chas. M. Higgins & Co., Charing Cross-road.

APPARATUS.

The Cadett Automatic Exposure Indicator. Price per pair, 1s. 6d. Cadett & Neall, Ashted, Surrey.

LANTERNS AND ACCESSORIES.

Portable Oxygen Generator. Price complete, £5 5s. W. I. Chadwick, 2 St. Mary's-street, Manchester.

Whitten & Walnwright are publishing a list of their plates, with reduced prices.

Cadett & Neall will send their new price list on receipt of stamped wrapper. It contains several interesting formulæ.

W. I. Chadwick is arranging a series of lectures on "Stereoscopy and The Magic Lantern."

Chadwick's Portable Oxygen Generator has been somewhat modified, and is again on the market.

A Print on "Otto" gelatino-chloride paper, toned in a combined bath without alum or lead, has just been placed in *The Photogram* reading-room.

The Moonlight Patent Lamp Co. have altered their telegraphic and cable address from "Iredale, Liverpool," to "Moonlight, Liverpool."

A Special Brush, which should have a large sale, is just being placed on the market by Chas. M. Higgins & Co., for use with their photo mounter.

Adamson's Incandescent Electric Light System for portraiture is being installed in Langfrier & Co.'s new studio in Sauchiehall-street, Glasgow, and in Warwick Brookes' Manchester studio.

Cadett & Neall have sent us a circular descriptive of their automatic exposure indicator. They will forward copies on receipt of stamped addressed wrapper. Judging by the circular, we should say that the little instrument will fill a long felt want.

The Enlarging Business at Willesden Junction seems brisk. Thomas Illingworth & Co. tell us that they are busy and thriving, and their success has induced them to open a London office and ample showroom at 5 Soho-street, London, W. From here they send negatives, etc., by special messenger two or three times daily.

The Moonlight Patent Lamp Co. are making small pocket cans suitable for carrying benzoline for use in their pocket lamps for photographers' dark rooms. The cycling photographer can attach one of these cans to his saddle pin or other part of his cycle, as a special attachment is added for this purpose.

A Sumptuous Studio, opened on February 17th by Lyddell Sawyer, 230 Regent-street, W., indicates that this gentleman, at any rate, has confidence in the photographic future of London. His work has for years been well-known to our readers, many of whom, no doubt, will now make acquaintance with the artistic and genial personality of the artist himself.

The new Thomas Al Plates well sustain the reputation gained by previous brands. They seem to do equally well with a mixture of eikonogen and hydroquinone, or the old reliable pyro with either soda or ammonia as the alkali, though the makers urge the use of their single solution developer, which comes ready for use, requiring no dilution, and can be used repeatedly. This is often a great convenience in emergencies, even for experts, and for the beginner who has not yet gained experience is an invaluable help.

Another use for old negative glass has been devised by the proprietors of the Pallion Sawmills Co., Sunderland. They are supplying, at ridiculously low prices, frames of solid walnut made to hold any number of prints of half-plate or quarter-plate size. The partitions are adjustable, so that any length of print may be used in the frame. Glass will be supplied, when required, at a low price. An extra fitment consists of a top bracket, which gives a decided finish to the frame. It is a frame that will surely sell at sight.

Acetylene.—Calcium carbide is now obtainable from Read, Holliday & Sons, Ltd., of Huddersfield, who also supply a large generator for use in the illumination of residences, &c. Smaller machines are in preparation, but at present the firm is overwhelmed with orders for the large ones. At the present price of calcium carbide, the cost of acetylene gas (calculating for its extra illuminating power) is equal to coal gas at 3s. 10d. per thousand feet.

Albumen Paper is not dead by any means. Not only are old sensitizers still continuing the business, but a new firm, the Electro Photo Co., 30 Fleet-street, London, E.C., has just gone into the line, and seems prepared to make a bold bid for success. This new firm says that if paper up to the standard of that which they offer had been regularly obtainable, albumen paper would never have gone out of favor as it has done. Be that as it may, the samples from the Electro Photo Co. are thoroughly good quality—in fact, no one need desire better paper.

The Prosser Roberts Co., of Camberwell, is going more thoroughly into the wholesale supply of photographic requisites, and announces 'this month a large number of cheap and useful sundries which might well be stocked by all photographic dealers. Amongst the best of them are a really excellent anti-halation pad and hypo solution bottle, which we briefly described in our issues for January and February. They have also a very cheap and handy monochromatic view finder, which can be adapted for lenses of any focal length; and a "well" developing tray, with glass bottom and solution well at one end to allow of plates being examined by transmitted light during development. The trays are made of metal, coated with enamel paint.

The Imperial Flash Light Plates are fully up to their name, the speed calculated by the Hurter and Driffield system being 342. We have tested them by subdued light and found it needful to use well-restrained developer. They cannot fail of being useful in studios, hand-camera work, and wherever an exceedingly short exposure is necessary. The developer we used was simply pyro and soda, but the makers recommend the following as giving the best results:—

IMPERIAL STANDARD DEVELOPER.

No. 1.				
Pyrogalllic Acid	...	...	...	55 grains.
Metal	...	...	...	45 "
Metabisulphite of Potash	...	...	...	120 "
Bromide of Potassium	...	...	...	20 "
Water to	...	...	...	20 OZS.
No. 2.				
Soda Carbonate	...	...	...	4 OZS.
(Washing Soda)	...	...	...
Water to	...	...	...	20 "

For use:—Take equal quantities of Nos. 1 and 2. For over-exposure add a few drops of a 10% solution of potassium. If thin negatives are desired dilute the mixed developer with water.

Correspondence.

Stereoscopic Vision.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—By an accident I did not see your November number until a few days ago. The article on stereoscopic vision interested me greatly, but I do not think Mr. W. E. Debenham's explanation quite as full or as accurate as it might be. At first, each of the two dots on the card is doubled, so that the learner sees four dots, and not only three. When he is conscious of there being apparently four dots, the next step is to try to make the two central dots coalesce into one. But something more than this is necessary before he can see stereoscopic pictures in relief. In ordinary vision the eyes focus themselves automatically and unconsciously to the point to which their axes converge. In the present instance, as the left eye is looking at the left hand dot or picture, and the right eye at the right hand, the axes of the eyes are either parallel or they converge to a point a long way off. But they must be focussed to a much nearer point, namely, to the plane of the card or picture, and this I believe to be the chief difficulty. Some people acquire the power more easily than others, and my experience is that it is easiest for short-sighted persons. This is no doubt due to the fact that they cannot focus their eyes for a distant point without the aid of glasses, and that the connection between focus and convergence is not so automatic in their case. But I cannot altogether agree with Mr. Debenham when he says that there is no possible danger and that the suggestion of strain to the eyes is ridiculous. The eyes may not be actually injured, but the power to disassociate focus from convergence, which renders stereoscopic vision possible, may be and probably is a distinct disadvantage in ordinary vision, since if much used it must render the eyes slower of apprehension. I must also demur to the statement that another method of obtaining the same result is to "squin" at the pictures, looking at the left one with the right eye, and vice versa. "Squinning" is unequal convergence of the axes; in this case the convergence is equal, but it is to a point between the eyes and the picture, and the result is stereoscopic, if you will, but false, since the foreground and the background appear to change places. This method is useless for a properly mounted stereoscopic print, but it is useful for examining a negative or an unreversed print. It is, however, probable that few but short-sighted persons could use it, since it involves a still greater strain on the eyes than the first method.—Yours truly,

H. G. MOBERLY.

24 Abercorn Place, N.W., Dec. 16th, 1895.

British Birds' Nests.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—I have been very much interested in your December supplements, more particularly as I have gone in, in a small way, for the same kind of thing myself. As you say that you hope to hear from "other readers who may take up work on the same lines," I am sending you herewith some of my own pictures of sea birds and their nests. You will of course see that most of them are enlargements, nearly all of them having been taken with Fallowfield's Focussing Facile; but it struck me that you might like to see them, and could perhaps give me an idea as to the best way to make good use of them.

I may mention that I experienced the same kind of thing as Mr. Townsend speaks of in the November number of *The Photogram*, and thought that it was through the slide leaking; but an old experienced photographer told me that it was caused by allowing the plates to remain too long in the slide which admitted air through the folds sufficient to act on the fast plates. Perhaps this was the cause with Mr. T.'s—Yours faithfully, C. J. KING.

St. Mary's Pharmacy, Isles of Scilly.

[The writer sends some interesting views both of sea birds and their nests.—Eds.]

[The following letters on "Black Bands" have been unavoidably held over for several months, but the subject being one of decided interest, we insert them now rather than hold them out altogether.—Eds.]

Black Bands.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—I see in your issue of November an allusion to black bands, the cause of which does not seem to have been explained. I have never met the defect myself, but if any of your readers will, on its recurrence, forward me the camera, etc., in which it occurs, I will do my best to elucidate the matter.

I need not say that every care will be taken of any apparatus so sent, and that it will be returned, carriage paid.

I remain, yours faithfully,

A. B. CHATWOOD,

(Author of "Photography: Artistic and Scientific.")

Gukku, Manchester Road,
Thornton Heath, Surrey

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—Mr. Townsend's article on the subject of "Black Bands" comes at a somewhat opportune moment in my case, as I think I can throw some light on the subject. A few days ago, while making some transparencies by contact, I came across two plates marked with broad bands that were apparently less sensitive than the other portion of the plates.

The conditions of plates, exposure, and development were identical, and the plates were used, one after another, during one morning. The only deduction to be drawn seems to be inequality of coating. I may mention I was using gelatinobromide process plates.—Yours faithfully,

THE AUTOCRAT OF THE WORKROOM.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—In your November issue a correspondent asked for information as to why certain negatives of his were marked with dark bands. I found that the cause was to be looked for in the plates, as I had similar markings on some half plates, and also on another occasion on quarter plates. The marks were vertical and extended from top to bottom. I have had 42 years experience of photography, and could tell at once by the appearance it was not the camera or slide at fault. I had three double backs, two were filled from the one box being the last in the box. The other slide was filled from a fresh box, and these two plates were the marked ones. The quarter size I put in a hand camera, and nearly the whole dozen were marked, more or less, and not in the same places, but all one way. If I have any by me I will call and show them to you.

I am, yours truly,
WM. BEYER.

118, Mansfield Road, N.W.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—The communication from Mr. Townsend on the above subject in your Nov. number was of much interest to me, having been as recently as last September the victim of this somewhat unusual defect. Taking at that time a holiday on Tyneside, I exposed six dozen films (half-plate), out of which number fully sixteen

were spoilt beyond all hope of recovery, and others injured from this cause. In my case, it was not owing to a new camera, or to any volatile material in its construction, two years of constant service having fully dissipated all such; and the most rigid investigation fails to detect any flaw whatever in the fitting, lenses, or shutters. It could not have been owing to defective dark slides, as I used a changing box, holding 24 cut films in sheaths, the whole 72 sheaths being filled in my own dark room before leaving home, thus avoiding most of the risks attending the use of temporary darkening arrangements. Nor does any other reason present itself to my mind that cannot apparently be negated by the facts, unless the fault lies with the film itself. I am loth at all times to blame the plate-maker, to whose skill and care we owe so much, but does it not seem likely that this defect arises from unequal coating? It need not be a matter of surprise that this should occur occasionally, the wonder is that it is not more frequent. I enclose some prints from such negatives as have been saved in a printable condition, and I hope that some of your correspondents may be able to furnish a plausible explanation.

Yours truly,

RICHARDSON BROWN.

P.S. To the best of my belief, all the faulty films came out of two packets only.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—In answer to your demand at the end of the article by Mr. C. F. Townsend ("Things that require an explanation") in the November issue, I have something to communicate with you.

My friend, Mr. Alex. C. Anderson, has had a similar case as Mr. Townsend mentioned. He had bought a new camera with double backs, which were partly roller blind dark slides. These double backs were painted black inside, and the part that formed the roller blind was covered with black linen. In the beginning, my friend obtained two negatives which had fog over the whole plate except that part which was covered with cloth.

Like Mr. Townsend, he did not know what was the cause of that phenomenon, and he asked the dealer in photographic materials, from whom he bought the camera, and who was a professional of great experience, for explanation. The dealer told him that the apparition was caused by evaporation of the black paint which was still too fresh, and that after some time he need not fear the fog which now corrupted his plates also all like Mr. Townsend has described; in fact, afterwards, the phenomenon appeared no more.

I believe that it will be difficult to prevent it, or the manufacturers must use another black paint for the double backs. Perhaps it will be possible to prevent it by evaporation of the black paint before using the camera, and in every case it will be a good thing to let the plates not remain too long in the double dark slide.

By mediation of my friend Anderson, I send you herewith two prints that will show you very clearly the fog in question. Hoping that this communication will contribute something to the important question.—With much respect,
Yours subscriber, D. WEYERS.

Marendyk 81, near Leyden, Holland.

In the Colors of Nature.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—In connection with the woodcuts appearing in your issue for February, representing a positive and negative taken according to my method of color photography, an account of the procedure is given into which some mistakes have entered. The screen used in obtaining the negative is not lined in the same colors as are borne upon the screen ultimately used in viewing the positive. The first screen carries the three colors requisite to give densities of image upon the plate corresponding with the degree in which the various wave lengths affect our three color sensitive nerve-systems. The viewing screen carries the three fundamental-sensation colors, which alone are excited in, or conveyed by, the nerves. The method in fact is a realization of "Composite Heliochromy" in a single image. The writer speaks of the approximate nature of the method. There is—with correctly chosen colors on the taking screen—no want of truth observed or to be expected, except what arises owing to the complex nature of the green sensation. The want of fidelity here is but small. I have endeavored to explain this matter in *Nature*, of Nov. 28th, 1895. Again the writer is under the impression that the lines do not touch one another. They do, however, meet each other with accuracy.

Thanking you for your notice of my work, I remain
yours, etc., J. JOLY.

Psychography: A New Science?

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—With reference to the psychograms of Mr. W. Ingles Rogers, published in the January number of *The Photogram*, it seems to me that they can be explained readily on the supposition that they are due to fluorescence of the retina. Any light given off by this fluorescence would be focussed by the lens and aqueous humor of the eye at the same distance as the original source of light, and produce an image capable of affecting a photographic plate. As the sharpness of the image depends upon the focus of the eyes remaining the same during the time the plate is exposed, I should think that the most successful experiment would be produced by a short exposure, the object having been previously illuminated by strongly actinic light. It is generally believed that the reason we do not see the ultra-violet rays is that they are destroyed in causing fluorescence of the retina. I have no doubt that an exactly similar result to that obtained by Mr. Rogers could be secured by substituting for the eye a lens and a screen coated with luminous paint. As regards "mind pictures" being transmitted through the eyes, it is by no means unlikely that a reflex action from the optic centres of the brain, sent to the rods and cones of the retina through the optic nerve, might cause fluorescence of the retina. The subject of fluorescence and phosphorescence is worthy of greater attention from photographers than it receives at present.—Yours faithfully,

C. F. TOWNSEND.

31 Elms-road, Clapham Common, S.W.

To the Editors: *The Photogram*.

DEAR MADAM AND SIR,—The article "Psychography: A New Science?" in the January issue of *The Photogram*, is very interesting, though, of course, the experiment is not absolutely new in principle. The questions, however, asked by the writer at the end of the article seemed to me to be somewhat unnecessary. In the first place, "Is he at all sure he can concentrate his mental gaze (italics mine) upon one image, without lapsing into vacancy or allowing the intrusion of innumerable other thought-forms?" I would ask, why "mental" gaze? Surely "physical" gazing suffices. Again, why should he not "lapse into vacancy?" Surely the experimenter must have done so, or one object, and not two, would have been impressed on the plate (reason follows, v. below). The questioner asks, secondly, "Is it natural with him when gazing at an object a few inches away for the eyes to take and maintain positions with parallel or even divergent axes?" I would say: Yes! and natural to everyone after the first few seconds or minutes, on account of the fatigue induced by maintaining convergence. As for being "unique in his powers" for being able to do so, on the contrary, I would say he was unique if he did not do so.

Let anyone try to converge their eyes on one object at a short distance, for five minutes, even, and they will find their eyes straying into axes parallel to each other, notwithstanding all their efforts, and the object viewed will then appear as two somewhat indistinct ones near the eyes, while the eyes themselves are gazing far away and beyond. The inuendo conveyed in the suggestion that Mr. Rogers should develop in absolute darkness is, to me, ridiculous. The first thing I did on coming to fig. 2 in the course of the article, was to look at it stereoscopically, and the two objects at once combined to form one, more perfect one! The man is not yet born who could draw these objects so as to combine in this way. The writer of the article asks Mr. Rogers "if he has practised stereo vision, as in November issue, p. 246." Surely if the writer had done so he would have looked at these impressions stereoscopically, and so saved himself from asking these later questions.

As neither Mr. Rogers, nor anyone else, to my knowledge, has come forward to say that these images combine stereoscopically, I find it necessary to do so, as it would appear to clear the ground from much false apprehension. If the experiment was conducted as described, it seems absolutely proved that these impressions are genuine, and that one is from each eye when we find them combining so easily and perfectly.—I remain, faithfully yours,

F. DUGON.

17 Ilberton-road, Rotherhithe.

[We have received such a voluminous correspondence on the subject of "The Nude," that it is impossible to find space for even a small fraction of it. In view of other correspondence, on matters of more vital interest to photographers, we are reluctantly compelled to hold it over indefinitely.—EDS.]

An X-Ray Society.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—As the importance of the discovery of Professor Röntgen, and the immense field for investigation which it opens up, are becoming apparent, it seems as if a society of those interested in the work would fill a most useful purpose. As a means of intercommunication, and for preventing duplication of work, it would be valuable. Also, as the apparatus that at present seems necessary is very expensive, a society, with a room provided with apparatus, would be most useful to members, who could pay a couple of guineas a year, but who cannot afford to buy the apparatus. A thoroughly well-fitted demonstrating room might be used for shadowgraphing surgical cases during certain hours, possibly at a charge that would partly cover the expense of a permanent secretary and demonstrator.

Will you allow those who are interested in the subject to communicate with you in the first instance; and, if many see the desirability of such a society, call a preliminary meeting at some central place in London?—Yours very truly,

A WOULD-BE MEMBER.

[We are glad to do as our correspondent suggests, and have sent proofs of his letter to gentlemen likely to be interested. A society on similar lines has been formed in Berlin, and enrolled forty members at the preliminary meeting. In England we think it might most properly and advantageously be formed as a branch of the Royal Photographic Society.—EDS.]



Questions are answered by post when stamped envelope is enclosed for reply. Questions without stamped envelope are not answered at all.

A few of the most generally useful answers are given in this column.

Queries should be brief, but MUST give full details; and should be accompanied by samples of faults, etc.

"THE NEW LIGHT."—Many Crookes' tubes are useless, apparently because of their insufficient exhaustion. Prof. Newhass states that he has obtained X-ray results with an ordinary incandescence lamp by wiring-up to the attachment for the carbon filament, to form the anode, and placing a metal disc to form the cathode outside the glass. Newton and Co. (Fleet-street, E.C.) tell us that an outfit for working from the street mains would cost about £20, and would include a Tesla coil, specially wound, and a Crookes' tube. To work from battery the outfit would cost about £25, and consist of ten Groves' cells, a Tesla coil, an induction coil, and a Crookes' tube. James Apps (433 Strand, W.C.) informs us that an outfit such as is successfully used by J. W. Gifford (of Chard) costs about £56, and consists of a hand dynamo, a ten-inch spark intensity coil, and a Crookes' tube.

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THE NEW LIGHT.

Continued from the special issue of THE PHOTOGRAM, which was published Jan. 30th, 1896; fourth edition, with additional matter and illustrations, now on sale. Uniform in size and style with THE PHOTOGRAM, and can be bound in the volume. Price threepence, post free, fourpence.

Our Own Investigations.

MOST of the workers on the "X" rays are electricians or surgeons, and as much of the work to be done upon the subject demands photographic rather than surgical or electrical experience, we trust that many photographers will take up the work. As the cost of apparatus, and the fact that photographers are not necessarily competent to handle high-tension electrical apparatus, are the principal difficulties in the way, we have made special efforts to obtain information of the simplest and most reliable apparatus for the purpose. The letters which follow show that excessively expensive apparatus is not necessary; and the practical article by E. A. Robins, seems a valuable contribution to the subject. It is only a preliminary contribution, however, providing for comparatively short exposure work in the present state of our

incomplete knowledge. Mr. Robins is conducting, for us, a series of experiments with a view to immensely reducing the necessary exposure with a given apparatus, or reducing the cost and power of apparatus necessary for a given exposure. Many other workers are busy in the same direction, and we shall be pleased to receive and publish their results.

Amongst others, J. O. Grant, the well-known Hon. Treasurer of the Hackney Photographic Society, an electrical engineer by profession, has undertaken a series of experiments which seem to promise success.

In addition to the work of Mr. Robins, we hope for good results from the work of other investigators who are busily working under our instructions, and expect to include one, or possibly two, very important papers in our next issue.

Apparatus for Röntgen Work.

By E. A. ROBINS.

OWING to the interest aroused by Prof. Röntgen's discovery, a few words on the construction of induction coils and other pieces of apparatus in connection with the production of the "X" rays may not be out of place. Any person with an ordinary amount of ingenuity and some little mechanical skill can make the apparatus mentioned below, and much cheaper than can be bought.

The first and perhaps most important point is the generation of the necessary power requisite to run the coil; this can be obtained from primary batteries, secondary batteries or accumulators, and the ordinary supply mains. Of primary batteries the most powerful is the bichromate, composed of a plate of zinc and two plates of carbon in a saturated solution of bichromate, to which is added strong sulphuric acid. This, unfortunately, has the disadvantage of falling off in strength after some time. Daniell's cell, composed of a cylinder of copper surrounded by copper sulphate, and a zinc plate in a porous pot and surrounded by zinc sulphate, is more constant, but not so powerful. Secondary batteries have the disadvantage of having to be re-charged, and this can only be done at a dynamo or off the supply mains, otherwise this is a very convenient and portable form for producing the

current—these must be bought, as the manufacture is of great difficulty and involves the use of large currents in the formation of the plates. The coil can also be driven off the supply mains, great care being taken to have sufficient resistance in circuit to prevent too large a current flowing through the primary and fusing the wire, and may be, the leads of the house. An alternating current can be used and slightly simplifies the construction of the coil, but an ordinary resistance cannot be used in this case. It has been shown that these results can be produced with short exposures by a coil giving a spark of about 6 inches, and the production of this I propose to describe.

The coil, as represented in figure 1, is composed of a bundle of iron wire, surrounded by two layers of thicker wire, called the primary, which carries the inducing current; and this is again surrounded by a large number of coils of very thin wire, called the secondary, in which the high pressure is produced; a contact breaker, and a condenser. The iron core is composed of well-annealed iron wire, of No. 30, B.W.G. (Birmingham wire gauge), made into a bundle $1\frac{1}{4}$ inches by $1\frac{1}{4}$ inches, made red-hot in a fire and allowed to cool slowly. When cold, the whole bundle, kept together by wires round the outside, is soaked in shellac

varnish or melted paraffin wax until it has penetrated right through. This is to prevent destructive currents being set up in the iron. When dry a layer of brown paper, soaked in paraffin wax, is placed round; and over the whole a thin ebonite tube. On this is wound the primary wire, composed of two layers of No. 14, B.W.G., cotton covered and well soaked in paraffin wax. About two lbs. of wire will be required. A layer is wound on, leaving ends long enough for making the connections, and over this a layer of paraffined brown paper, then the other layer of wire, finishing at the end at which the winding started. The primary wire will safely carry eight amperes without heating appreciably, and very likely ten could be used. Over the last layer is placed a layer of paraffined paper, and then a thin ebonite tube. On this is wound the secondary coil, which is best composed in sections, in this coil, eight. This arrangement, by placing wires having a great difference of potential away from one another, much diminishes the chance

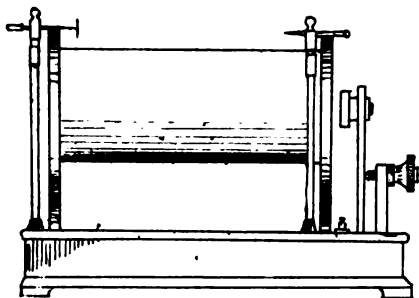


FIG. 1.

of internal sparking and thus ruining the coil. The wire is No. 36, B.W.G., of which twelve lbs. will be required, silk covered, and the bobbins containing the wire should be soaked in paraffin wax before winding. A pound and a half of wire is wound upon each section, a former being made corresponding to a section and having one side removable, and may be driven from an ordinary sewing machine table. Figure 2 will show the method of winding.

The wire is drawn through a hole near the lower part of the former, leaving enough projecting for connections, and the bobbin filled with wire, $1\frac{1}{2}$ lbs. The next is wound in the same way, and the coil turned round before placing upon the core, thus, in two adjacent sections the wires run in opposite directions, as will be seen from figure 2; the two inner ends are connected. The third coil is wound and placed like the first, the outer end being joined over the top of the division, with the outer end of the second coil. The fourth is like the second, and has its inner end joined to the inner end of the third, and so on, the eighth coil having one end free and is one of the terminals, the first coil being the other. The coils should be soaked in paraffin wax, the

divisions may be thin ebonite of one-sixteenth to one-eighth inch thick, or of two or three thicknesses of celluloid, such as is used for the thick films, which I find very useful for this purpose. The ends may be made of ebonite or well-seasoned mahogany about $\frac{3}{4}$ inch thick. Of course there is no connection between the primary and secondary, if there is the coil is of absolutely no use. The soldering of joints between the coils should preferably be done with resin, as "killed" acid may corrode the wire and cause heating, and perhaps melting of the wire. The outside should be covered with thin sheet ebonite bent round. This prevents sparking on to the coil. The secondary terminals should be supported, about eight inches apart, on glass rods. The coil, if it is to be used with continuous currents, must have some method of making and breaking the current. The contact breaker may be composed as in figure 3.

A small iron hammer, $1\frac{1}{2}$ inches in diameter, supported upon a spring of brass having a screw touching against it. The points of contact should be platinum, to guard against corrosion. The hammer is opposite the end of the iron core and works thus—the current comes from the battery through the screw and spring to the primary coil and back to the battery, this makes the iron core a magnet, which attracts the soft iron hammer, dragging the spring away from the point of the screw, this breaks the current, the core ceases to be a magnet, no longer attracts the hammer, and spring flies back again, making contact. Another form of contact breaker is that shown in figure 4.

A rod is pivoted in the centre, at one end of which is a platinum point dipping into mercury, on the other is a soft iron armature, below which is an electro-magnet. The current from the battery flows to the mercury up the platinum point, along the rod, down the support, and round the magnet wire, through the primary, and back to the battery. This excites the magnet which attracts the armature, raising the point out of the mercury, breaking contact, current ceases and the spring pulls the rod down, again making contact. The mercury is covered with a layer of paraffin oil, to prevent sparking and also oxidation of the surface. For large coils the last-named is the best, being more under control. For continuous currents a condenser is required, and is for the purpose of receiving the current induced in the primary on the break of the current by the contact breaker, which would otherwise leap across the gap between contact breaker and platinum point, the charge stored up in the condenser also assists the current in the primary wire on the make of the current. It is composed of 200 sheets of tinfoil, 9 inches by 9, having a layer of good paraffined paper between of slightly larger size than the tinfoil, the corners of alternate sheets being joined together, and each set being joined to the contact breaker as in figure 3, which shows the condenser in position; the condenser should, when finished, be placed under heavy pressure until the paraffin wax has set. It is most important.

that no connection exists between the two sets of tinfoil sheets, as this would short circuit the contact breaker and no effect would be produced upon the coil. The end of the primary should be joined to the foot of the spring in the first kind, and to the magnets in the second kind of contact breaker, the screw in the first and the mercury in the second being joined by a No. 14 B.W.G. wire to a large terminal. The other end of the primary is joined to a like terminal, placed about two inches away. The wire on the magnets of Fig. 4 must be the same as the primary wire. The secondary terminals should be placed as far away as possible from the primary terminal and contact breaker, as a spark from an induction coil such as this would be very dangerous, if not fatal to some people. Sparks should not be taken to the

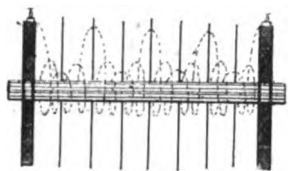


FIG. 2.

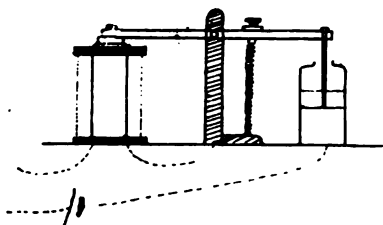


FIG. 4.

body when above $\frac{1}{4}$ -inch in length. If the current be taken from the lighting mains a variable resistance must be placed in series with the primary; enough to bring the current down to about six amperes, this being quite enough to run the coil. As this depends upon the size of the house leads, the advice of a competent electrician should be taken before attempting, or the mains may easily get fused, owing to the resistance of the primary being very small, about half ohm. If an alternating circuit be used for lighting, an ordinary resistance cannot be used, but a device known as a "choking" coil is used. This is a coil of thick wire, containing an iron core, which can be moved in or out, the farther the core is in the less the current; but, as above, advice should be taken before meddling with any electric lighting mains. A "choking" coil requires adjusting for every circuit. In the last case the condenser and contact breaker are not required, the oscillations of the alternating current having the same effect. If high frequency and potential be

required, and very small current, the following device may be adopted.

One terminal of the secondary is connected to the inner coating of three half-gallon Leyden jars, the outer coatings being connected to earth. The inner coatings of the jars are connected to a gap between two highly-polished brass balls of an inch in diameter and about a quarter of an inch apart; the other side is connected to a coil of well-insulated wire (about one pound of No. 32, B.W.G.) wound on an ebonite tube and well soaked in paraffin wax, the other terminal of the coil is connected to three Leyden jars, as in the first case, but with no spark gap, being connected directly to the other end of the coil. Another coil of wire is wound over the first, being well insulated from it. A very high frequency of alternation is produced in the last coil, providing a continual

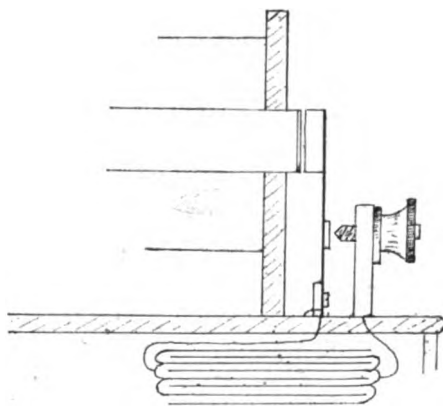


FIG. 3.

discharge take place across the gap (see Fig. 5). All the effects produced by Tesla before the Institute of Electrical Engineers can be produced, on a smaller scale, of course, by the above apparatus; and it has been said the "X" rays are produced most readily by these means. An ordinary incandescent lamp globe, of which the filament is broken, can be used for all the above-mentioned Tesla effects, but is usually not highly rarefied enough to produce Prof. Röntgen's "X" rays. The tubes required for this work are those first produced by Crookes, and used by him for studying his radiant matter (see *Electrician*, Jan. 16th, 23rd and 30th, 1891) and are glass bulbs having an exceedingly high vacuum, much higher than the ordinary "vacuum," or Geissler tube, which is of no use for this work—at all events, without exceedingly long exposures. The connections with the interior are made by means of platinum wire fused into the glass, this metal being the only one which has about the same co-efficient of expansion as glass. These electrodes, as they are called, end (in the pattern of tube

most used in England) in a ring of aluminium and a disc of the same metal, respectively. (See Fig. 6). The bulb is pear-shaped, the disc suspended from the smaller end, and the ring projecting from the side about three-quarters of an inch below the disc. Disc and ring are of about one inch in diameter. The generally used Continental form (which is also made in England) has no ring, only a wire projecting from the side, the disc being nearer

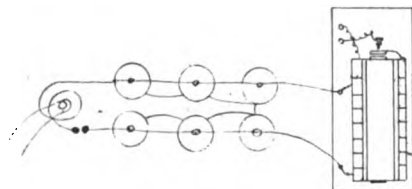


FIG. 5.

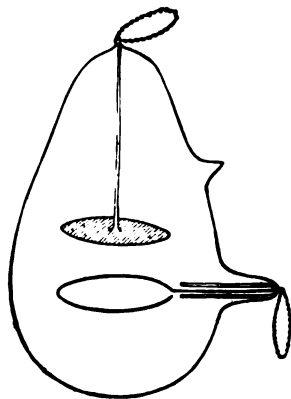


FIG. 6.

the top of the tube. (Fig. 7). The discharge is of a pale violet, the glass of the tube fluoresces an "apple-green" tint.* The high vacuum in these tubes is obtained by means of a mercury pump, of which the Toepler is a good form, which I will describe (see Fig. 9). The diagram shows one form of the Toepler pump. In the other, the long tube (*d*) is replaced by a mercury valve, thus doing away with the liability of fracture of the long tube. The tube (*a*) has a bulb (*b*) of comparatively large capacity, blown at the upper end. Out of the upper end of this runs the tube (*c*), from which the air is discharged. The air enters from the tube to be exhausted by the tube (*d*), on to the end of which it is fastened either by fusion of the glass or else by an air-tight joint of rubber. The tube (*a*) is about 40 inches long to the bulb; (*c*) is about 36 inches from the level of the top of bulb; (*d*) is about 36 inches high. The reservoir (*e*) containing mer-

cury is connected to the lower part of (*a*) by means of a flexible rubber tube, and is long enough to be raised above the bulb, and contains enough mercury to fill the bulb and tube (*a*). The operations are:—The reservoir is raised to fill the bulb (*b*), the tube is fastened on the end of (*d*), (*c*) dipping below mercury. The reservoir is now lowered, the air rushes into (*b*) from the tube being exhausted. The mercury has risen in (*c*) by the pressure of the



FIG. 7.

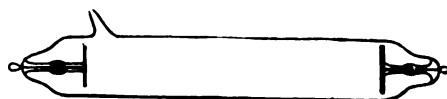


FIG. 8.

atmosphere. The reservoir is again raised cutting off (*d*) and forcing air out before it through (*c*); the operation is again repeated, always driving all the air out of (*c*) by allowing a small quantity of mercury to flow over from the bulb. If very high vacua are required, the tube to be exhausted is filled with carbon dioxide and exhausted, the residual gas being absorbed by a tube containing caustic potash being placed between the tube and (*a*), the bulb is sealed off by a blow-pipe flame before withdrawal from the pump. The extent of the vacuum can be judged, approximately, by the tube (*c*). When this stands at the barometric height, generally about 30 inches, when the reservoir is in the position of the sketch, the vacuum is fairly high. Gas is absorbed by the aluminium electrodes, is gradually given out, and will impair the completeness of the early-obtained vacuum. This can be got rid of by heating the partly-exhausted tube, and if an induction coil be joined to the electrodes, the extent of the vacuum can be gauged from the discharge produced in the tube. The tubes are beyond the scope of any one except an experienced glass-blower, and the exhaustion is very diffi-

*The form of tube finally adopted by Prof. Röntgen himself is shown in annexed sketch, Fig. 8. It is being made by Baird & Tatlock, Cross Street, Hatton Garden, E.C., to whom we are indebted for the use of the first example made, from which to make our sketch,

cult, and they are, therefore, better obtained from a manufacturer. The exhaustion generally takes a large amount of time.

To return to our coil. It may be mounted upon an ebonite or mahogany base containing a cavity in which the condenser is placed. The frequency of the discharge may be increased by tightening the screw of the contact-breaker, the greatest being obtained when it is giving the highest note. If a smaller coil be required, say a two-inch spark, the core should be composed of iron wire (No. 30, B.W.G.) treated as described above, about ten by one inches, the primary wire two layers of No. 16, B.W.G., double cotton-covered and insulated as described above; the secondary is composed of four pounds of No. 38, B.W.G., wound in sections, double silk covered. A hammer contact-breaker should be used for such a small coil as this. The condenser should be about 100 sheets of tinfoil, nine by seven inches.

The wire is, of course, the most expensive article, and should be obtained direct from the manufacturers. The London Electric Wire Co., Playhouse Yard, Golden Lane, E.C., supply it. The materials for the six-inch coil could be purchased for about £5 10s. Of course, this leaves out all labour upon the coil. Some turning will have to be done, and this depends upon the person who is making the coil. The smaller coil will cost about £3 3s. for material; but, of course, will not give results comparable with the larger coil. The paraffin wax can be obtained from the above firm, and costs about eightpence per lb. It should not be heated too high, as this slightly destroys the insulating power; it is best heated in a water bath, as paraffin wax melts at about 100° F. The weight of the six-inch coil will be about twenty lbs. Shellac varnish can be used for insulating purposes, and the glass pillars of the secondary terminals should be coated with it

inside and out if tube be used. Thin wires only are needed for connections to the secondary coil, as the current flowing is exceeding small, the potential being very high.

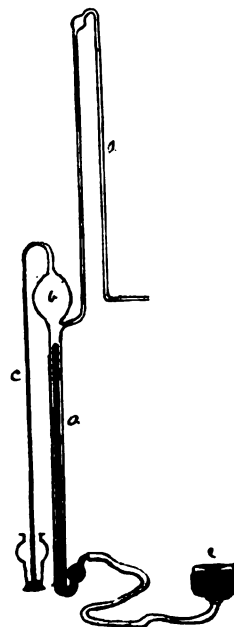


FIG. 9.

The Leyden jars can be made of half-gallon glass jars, the glass, not too thick and as white as possible, coated inside and out with tinfoil pasted on to about four inches from the top, the bare glass being coated with shellac.

Dark Light.

Continuing the note from M. Gustave Le Bon (on p. 14 of "The New Light") we give the translation of a further communication from him.

BEFORE giving the new results of the observations I am continuing to make on dark light, I will give a few hints to facilitate the researches of those who wish to repeat the experiments. The rapidity of commercial sensitive plates varies at least in the ratio of 1 to 4, therefore it is evident that if three hours' exposure is required for a very rapid plate, if we use a plate four times as slow, we shall obtain no result at the end of three hours. Nor shall we obtain a better result unless we use a sufficiently energetic developer. I have taken care, in my preceding note, to explain that I had carefully eliminated two factors of error—the possible influence of heat, besides that of the imprisoned light, on the negative. After having made use of several methods, one of the most simple of which

is to cut the negative in two and utilise both halves for comparison, I made it a rigid rule to experiment only with plates which do not fog over after a test of leaving plate and negative in contact in the dark slide for a whole day. If there were any image after exposure behind opaque metallic sheets, they could evidently only be due to the influence of dark light. Besides, I only use the same negatives. They can only receive the light which passes through the metal plates, that is to say, the dark light, because they do not leave the printing-frame, except in the dark room (cabinet noir). As to heat, I have guarded against it by keeping up the temperature to 50° for the 12 hours the sensitive plates are in contact with the negative, without obtaining the trace of an image. I have only used a paraffin lamp, so as to have a

constant light. Daylight gives better results, but it is too variable to be of any use for comparison. It is not by any means necessary that the opaque bodies should be in contact with the negative. The same results are found if placed a little distance behind, so as to isolate entirely the sensitive plate and negative from the metallic sheet. I have submitted to the inspection of the Academy (France) my experimental negatives, after exposures, as I have said, through metallic sheets of about the thickness of $\frac{1}{3}$ millimetre (=one-fiftieth inch). No. 1 was through a plate of aluminium, a body very transparent to dark light. The image is vigorous. No. 2 was from an aluminium medal, whose edges were protected by black paper, and simply placed on the printing frame. The transparency of aluminium to dark light is such that the image of the top surface was obtained after less than 2 hours' exposure. There was no pressure from the medal to the sensitive plate, because it was separated by the glass of the printing frame. The 3rd was through a sheet of copper $\frac{1}{4}$ millimetre, or one-thirtieth inch thick. This metal is also very transparent to dark rays. The image is sharp, though incomplete, because it was not in the middle of the negative. Moreover, these impartial impressions are not rare in these kinds of experiments. No. 4 was through a sheet of iron. It is very faint, but still sharp. On account of certain technical difficulties I have not yet exactly found out the relative degrees of transparency of different opaque bodies to dark light. However, up to now, I assert the most transparent are aluminium and copper, iron is less so. Zinc, silver, tin, are very little so. Black paper, and, above all, cardboard covered with black paper is infinitely less; so black paper (that found round our plates) is one of the bodies which allows the dark rays to go through with the greatest difficulty, in spite of its very slight thickness, which is only one-fiftieth of a millimetre or one one-hundred-and-twenty-fifth of an inch. If the black paper is put on cardboard exactly like our negative boxes, the opacity to dark rays is nearly complete, it being understood that all these exposures are lengthy. It will be noticed that cathodic rays pass through black paper very easily, whilst dark rays scarcely at all. Besides, this is not the only difference which is found between dark and cathodic rays.

I shall soon endeavour to ascertain to what limit dark rays submit to the laws of refraction and magnetic deviation. Some of the results obtained make me suppose that dark light is composed of radiations of a different nature.

Notes at the Royal Society.

A PAPER by Lord Kelvin on the generation of longitudinal waves in ether was read at the Royal Society's meeting, Feb. 13th. He described an arrangement for obtaining pressural disturbance through a considerable space of air, accompanied by a very small proportion of ordinary transverse waves. His apparatus would afford the means of exposing sensitive plates to these longitudinal

vibrations and thus might succeed in elucidating the nature of the Röntgen rays. A paper by Professor J. J. Thomson was also read, relating to experiments from which he concludes that all substances when transmitting the Röntgen rays are conductors of electricity. Captain Abney cited several facts which, in his opinion, excluded the theory of direct photographic action in any ordinary sense, and indicated some preference for the view that the Röntgen rays acted by first setting up phosphorescence or action of some unknown kind in the glass at the back of the sensitive film. This view was corroborated by an experiment described by Professor Dewar upon platinum-cyanide of ammonium at low temperature. This salt, ordinarily fluorescent, only became phosphorescent at the temperature of liquid air. On being exposed to Röntgen rays instead of to ordinary light, while immersed in liquid air, it showed when the liquid air was poured off brilliant phosphorescence. This proved that, whatever might be the nature of the Röntgen rays, they were convertible into light rays affecting the human eye. A large number of experiments were also described by Professor Dewar showing that resistance to the passage of Röntgen rays increased with increase of atomic weight. Organic substances were all relatively transparent, following the carbon, oxygen, hydrogen, and nitrogen of which they are composed. Mere complexity of structure made no difference, but substitution products showed increasing opacity in the order of the atomic weights of the combined chlorine, bromine, and iodine.

Röntgen Rays Visible.

ROME, Feb. 18.

PROFESSOR Salvioni's invention, in its primitive form, consists of a tube of black cardboard, one extremity of which is closed by a disc of the same material smeared over with a substance which is fluorescent to the Röntgen rays. At the other end is a lens, which permits this surface to be plainly seen. The mode of operation is very simple. The object to be observed is placed under the luminous rays of a Crookes tube, and is then examined through Professor Salvioni's cryptoscope. Those portions of the object under examination which are not permeable to the Röntgen rays are projected in shadow upon the fluorescent disc, and thus the bones of the hand, a piece of money held in the closed fist, compasses and razors shut up in their cases, and other hidden substances have been distinctly visible to those looking through the cryptoscope.—*The Standard*.

Traveller requires berth in good photographic house. London and County connection. Many years in optical and photographic trade. Highest references. Address, No. 668, THE PHOTOGRAM.

YOUR FRIEND who is interested in physical or electrical science will appreciate a copy of this issue. Send him one!

Brain Photography.

EDISON, the great electrician, announced his intention of attempting to photograph or shadowgraph the brain. This led Dr. Carleton Simon, of New York, to complete some researches he had on hand, and to report his success through a newspaper correspondent, who is obviously ignorant of photography. In spite of its errors, the brief account, as published in *The Daily Chronicle* of Feb. 14th, is worth copying. It runs:—

"For three years past Dr. Simon had been working quietly towards his end. Reports of Professor Röntgen's discoveries and Mr. Edison's experiments hastened his researches, and yesterday his labours were rewarded by

results which, though still incomplete, were fairly satisfying. An ordinary camera with platinum plates was employed.

Dr. Simon is not yet prepared to explain his process in detail. In making a statement to an interviewer, however, he said: "The rays I use in conjunction with sound, and they are electric rays so far as the light is concerned. I produce the effect by attraction of the light and propulsion through the brain substance. At the time of photographing the whole internal chamber of the brain is illuminated. My discovery is not consequent on the application of the cathode ray to photography."

Notes.

British v. German Tubes.—It has been stated that German-made Crookes' tubes are superior to British, because the latter are made of lead glass, which is comparatively opaque to the "X" Rays. A. C. Cossor, who has made many of the tubes now in successful use, says that although lead glass has been used for most of the old tubes for Crookes' radiant matter experiments, all made for Röntgen work have been of the same glass as is used by the Germans; but infinitely thinner than most of the German lamps. No doubt other British glass-blowers have taken the same precaution.

Dry Plates.—Careful comparative work is still wanted to determine what plates are most sensitive to the Röntgen rays. Rapid isochromatic, rapid ordinary, and slow ordinary are all recommended by different workers. One who has made a great number of exposures says:—"I think that sensitiveness (to light) is of little importance, but that thickness of film is essential. I think that with an emulsion half an inch thick we should get plucky negatives from almost instantaneous exposures." Will one of our readers take up this quest, and let us report their results?

Penetrative Power.—Dr. Adolf Heseckel, of Berlin, writes us that when a dozen sheets of bromide paper are placed between the objects to be shadowgraphed and the dry plate used, it is possible to develop well-exposed images on the whole of the films. This seems to give strong confirmation to the idea that a film of considerable thickness will be valuable in reducing the necessary exposure.

Thermography.—Many of the results now being ascribed to the Röntgen rays, or announced as novelties showing the penetrative power of magnesium and other lights, are due to heat phenomena which were described by Robert Hunt in 1880.

Books.—For reference on electricity, etc., a useful book is: "Electricity and Magnetism," by Silvanus P. Thompson, D.Sc., F.R.S., etc. Price 4/6; post free, 4/9; foreign, 4/11. (London: Macmillan).

A handy little book on induction coils is "Intensity Coils," Price 1/-; post free, 1/6. (London: Perken, Son & Raymont).

These can be obtained through any bookseller or photo-material dealer; or, at post free rates, from our publishers.

Lectures.—The Editor of *THE PHOTOGRAM* is prepared to undertake a few popular lectures and demonstrations upon "The New Photography." During the last fortnight in March he will be lecturing in the North of England and in Scotland, and has one or two vacant dates. The lecture will be practically illustrated, apparatus exhibited and explained, and lantern reproductions of many of the best results of several workers will be shown.

Publicity.—The investigator who makes a discovery of interest to the general public, naturally desires to obtain full credit for his work; and when many are working on similar lines it is often impossible to wait for the usual means of publication through the meet-

ings of learned societies or through the technical press, without danger of anticipation by other workers. To obtain full publicity in the newspaper press, it is desirable that the matter should be communicated to all the journals *simultaneously*, through the press agencies. We undertake to communicate to the various agencies, immediately upon receipt, any particulars of novel results that may be forwarded to us, not waiting for our own date of publication.

Visible Darkness.—*The Electrical Engineer*, New York, publishes a communication from G. d'Infreville, to the effect that he has perfected a process "for secretly photographing and seeing objects at night without the use of the well-known flash-light." This light, it is claimed, is invisible to the object upon which it is turned, and therefore much more valuable than a search-light for war-vessels—and burglar-trapping.

Weather Prediction.—M. Emile Gautier and M. Camille Flammarion state that, without wishing to be authoritative, they believe that Röntgen's discovery opens great possibilities in the region of cosmic and sidereal research, and that it may lead to accurate weather prediction.

Correspondence.

DR. NEALE'S APPARATUS.

THE EDITOR OF "THE NEW LIGHT,"

DEAR SIR,

I note what you say *re* my apparatus, and beg to enclose particulars, which I hope may be of use to you. The coil I used was a half-inch nominal, and I enclose prints of negatives taken with this. *Re* the proposed "X"-ray Society, I doubt that the subject is of sufficient popularity to start the venture, but should you think otherwise I should be willing to place a set of apparatus at your disposal to start the concern, and also to give my spare time to one up here.—Yours faithfully,
DOUGLAS NEALE
Edinburgh.

[Dr. Neale encloses the following list, with prices, of his apparatus, and also a number of prints which, although from underexposed negatives, clearly show the objects that were shadowgraphed.—Eds.]

Half-inch spark induction coil, with condenser	1	5	0
One tube, about	...	...	0 10 0
Two quart bichromate cells	...	...	1 5 0
One Special Dark Slide, arranged to hold plate	...	...	...
at variable distance from front, about	...	...	0 10 0
One doz. 1/2-plates, 2/9, developer, 2/6, hypo, 6d.,	...	...	...
trays, 1/6	...	...	0 7 3

A NOTE FROM NEWCASTLE.

TO THE EDITORS,

DEAR SIR AND MADAM,

As you state in special issue that you will be glad to hear of other results in "The New Photography," I send a few of mine. I have worked with coil giving 4.5 inch spark. and used current of the ordinary

alternating main, but reduced the voltage from 100 to 20 by means of a transformer. In most cases I have used a Leyden jar with spark gap between the coil and the Crookes' tube. The outer coat of the jar is insulated, and though people may laugh at thus only using a fraction of the Leyden jar, I may remind them that the arrangement is exactly equal to that of Hertz in his classical experiments. My inner tinfoil of jar is exactly equal to his brass sphere. If you utilise the outer coat you so increase capacity of jar that it takes an appreciable time to charge and discharge, so that frequency of current is much decreased instead of being increased.

Batteries (about three 1-pint bichromate) or a Wima-hurst can be used instead of main and transformer, only then the importance of using spark gap, or better, a gap and jar, as above, is much more. My results were obtained with 20 minutes or half-an-hour's exposure, three to five inches from tube. The Crookes' tube I use is a very small cheap one, about 1½ diameter, and retails at 3/6. I have varied the apparatus, and used other tubes of the same kind, but have always been successful. Others in Newcastle who have followed above directions have been equally successful.

—Yours truly.

A. LANDER.

[The examples sent are fully exposed.—Eds.]

BAIRD & TATLOCK, 14 Cross St., Hatton Garden, E.C. 40 Renfrew Street, Glasgow,

MANUFACTURERS OF

Chemical and Scientific Apparatus, Pure Chemicals, &c.,
Bacteriological, Physiological, and Histological Apparatus.

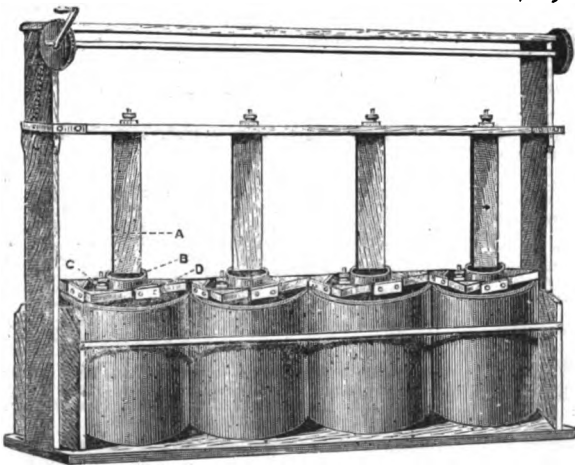
Sole Agents in Great Britain & Ireland for Becker's Son, & Co.'s Balances & Weights.

Crookes' Tubes, ^{LATEST} as used by Prof. Rontgen, 12/- each.
Tesla's Apparatus, including Induction Coil. (*Particulars on application.*)

Catalogues for Chemistry, Physiology, Bacteriology, Histology, Sound, Light, and Heat, Magnetism and Electricity, Mechanics, &c., on application.

REYNOLDS & BRANSON'S Patent CONSTANT BATTERY

Electromotive force, 1.9 volts.



The current given by this Battery is very powerful, and owing to the absence of local action, or polarization, perfectly steady.

Four cells, No. 1 size, will maintain a 24-candle incandescent lamp many hours without any noticeable diminution of intensity.

The Battery does not give off fumes, it is therefore very suitable for the laboratory or lecture table, also for lamps for the use of Surgeons, Dentists, &c., as well as for the electro deposition of metals and the recharging of storage batteries.

The Zincs do not require re-amalgamation, as the solution used contains a soluble Salt of Mercury; nor does the Battery require frequent recharging, a single charge will suffice for a month or longer, unless the Battery is heavily worked.

The method employed for raising or depressing the Zincs, an endless screw movement, is simple but very effective, and adjusts the current to any desired strength; but, if preferred, the gear as in above figure can be supplied.

PRICES.

Single Cells, complete	...	...	10s.
4-Cell Battery, complete as fig.	...	...	£3 10s.
6 " " (two in row)	...	...	£4 10s.
Induction Coils (prices on application).	...	...
Crookes' High Vacuum Tubes	...	...	£1 5s. each.

Apparatus complete for the New Photography. Particulars on application.

REYNOLDS & BRANSON, 14 Commercial St., Leeds

THE PHOTOGRAM

Vol. III.

APRIL, 1896.

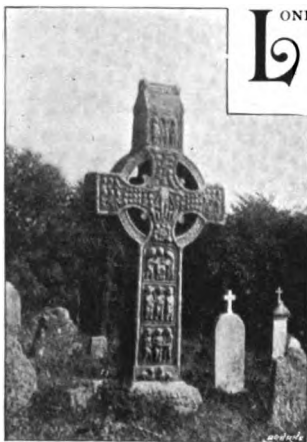
No. 28.

Copyright.—This Magazine, as a whole, with its contents, both literary and pictorial, is copyright; and the copyright is registered. Our contemporaries are very welcome to quote from our pages (with acknowledgment), but we propose to protect ourselves and our advertisers against piracy.

Beauty Spots.

No. 1.—Dublin and District.

BY H. GOODWILLIE.



MUIRDEACH'S CROSS, MONASTERBOICE.

By H. Goodwillie.

LONDON TO DUBLIN, *via* Holyhead, four services daily. Royal Mail (10 hours) leaves Euston 7.15 a.m. and 8.20 p.m. Express (12 hours) leaves Euston 9.30 a.m. and 6.30 p.m. Also *via* Liverpool from St. Pancras and by sea direct, bi-weekly, from London Bridge.

DUIBH-LINN (Black Pool), mentioned as a considerable place by Ptolemy in the second century, is now a city of 350,000 inhabitants, with very many points of interest to the camera-man. Two cathedrals (founded in the 11th and 12th centuries), three universities, fine public parks, numerous statues and public monuments, and most picturesque surroundings, make Dublin a holiday and photographic centre of the first order.

HOTELS are numerous and good, a few of the leading ones being:—Shelborne, Gresham, Metropole, Central, Morrison's, Hibernian, etc.

DARK ROOMS:—Photographic Society of Ireland, 35 Dawson-street; Robinson's, Grafton-street; Curtis, Suffolk-street; Mayne, Lord Edward-street, etc.

POINTS OF INTEREST.

Northern Dublin District.

HOWTH.—Rugged headland. Cliff and moorland scenery. Fine views of bay and southern coast line. Druidical and early monastic remains.

SKERRIES AND BALBRIGGAN.—Small sea-coast towns. Fishing

boat subjects.

DROGHEDA.—River and coast scenery. Old town gates. Many points of historical and archaeological interest within easy distance; site of the Battle of the Boyne, crosses and round towers of Monasterboice, abbey of Mellifont, tumuli of Dowth, Knowth and Newgrange ("the Pyramids of Europe.")

Western Dublin District.

VALLEY OF THE LIFFEY.—River and rural scenery, agricultural and grazing country.

LUCAN, MAYNOOTH & CELBRIDGE.—Historical and archaeological remains.

Southern Dublin District.

KINGSTOWN, DALKEY, BRAY & GREYSTONES.—Seaside resort with usual summer attractions of bands, bathing, boating, regattas, etc. Superb views of Dublin Bay from tops of Dalkey and Killiney Hills, should not be missed.

GLEN OF THE DOWNS, DEVIL'S GLEN, GLENMALURE, VALE OF OVOCA, MEETING



DECLINING DAY, PORT OF DUBLIN.

By H. Goodwillie.

OF THE WATERS AND WOODEN BRIDGE.—Prominent beauty spots in an all-over beautiful district.

GLENDALOUGH.—Mountain lakes and most interesting ecclesiastical ruins.

LOUGH DAN AND LOUGH TAY.—Picturesque loughs in midst of mountain scenery.

POULAPHUCA AND BLESSINGTON.—Waterfall and river scenery.

The foregoing is an epitome of most of the photographic points of interest in the district within easy access. The railway companies serving the different portions, *viz.*:—Great Northern Railway of Ireland; Midland Great Western; Great Southern and Western; and Dublin, Wicklow, and Wexford, make every effort to facilitate and encourage tourists, by issuing circular and through tickets, full particulars as to which are given in the descriptive guide books issued by them, and which can be had on application to their respective chief offices in Dublin.

Pedestrian, cycling and driving tours can be undertaken with the greatest success. The roads are numerous, and considering the nature of the soil, good. Those in the southern district are inclined to be somewhat mountainous, but any extra exertion incurred is amply compensated for by the ever-changing aspect of the face of nature in this part of the country. Hill and valley, gorge, river and waterfall, mountain torrent and land-locked lake combine with the gorse and heather-clad mountains, to make the district one to be remembered.

Instead of giving particulars as to well-known routes (which can be gleaned from any guide book), it would, perhaps, be more useful if suggestions were offered as to the reaching of some of the less known beauty spots lying a little off the beaten track.

With this view the following outline tour is given, covering the south of County Dublin and a portion of County Wicklow.

It may be done driving, cycling, or on foot, or perhaps in the near future the horseless autocar may be seen urging its vapoury course amidst these hills and valleys, which hitherto have not known the desecration of echoing to the common-place clank of mechanical locomotion.

First day, DUBLIN TO GREYSTONES (* 17 miles) *via* Scalp, Enniskerry, Dargle, Powerscourt and Kilmacanogue.

Second day, GREYSTONES TO ROUNDWOOD (20 miles) *via* Glen of the Downs, Newtownmount-kennedy and Devil's Glen.

Third day, ROUNDWOOD TO GLENDALOUGH (8 miles) *via* Vale of Laragh.

Fourth day, GLENDALOUGH TO WOODENBRIDGE (15 miles) *via* Vale of Ovoca and Meeting of the Waters.

Fifth day, WOODENBRIDGE TO DRUMGOFF (16 miles) *via* Aughrim, Aughavannagh and Military-road.

Sixth day, DRUMGOFF TO BLESSINGTON (28 miles) *via* Glenmalur, Laragh, Wicklow Gap, Hollywood Glen and Poulaphuca.

Seventh day, BLESSINGTON TO DUBLIN (18 miles) *via* Brittas, Saggart, Tallaght and Terenure.

The foregoing week's tour may be taken as merely an outline of what can be done in this way. While fairly representative of the scenery of the district it is capable of variation in a hundred ways, any and all of which will delight the lover of nature's pictures.

We will suppose our tourist to be a man, or a woman for that matter, who lays no claim to being



ENTRANCE TO PORT OF DUBLIN.

By H. Goodwillie.

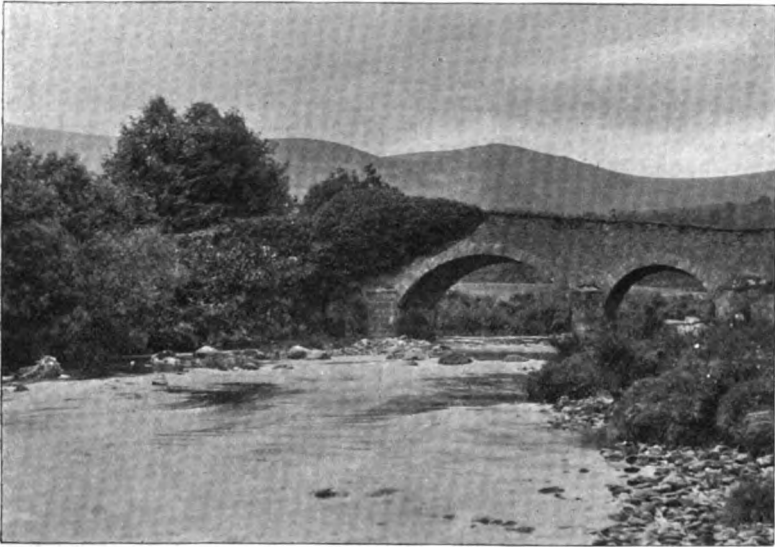
regarded as a long-distance walker and who does not possess a bicycle (if there is such a mortal left), consequently our tour will be a driving one, and a better way for seeing a country than from an Irish outside car does not exist.

Having engaged our car in Dublin for the week, and having taken pains to find a good horse, a civil driver who knows something of the country, and a well turned-out car with pneumatic tyres and jingling sleigh bells, we are in a fair way (subject to the good pleasure of the clerk of the weather) to make the trip in a style of regal splendor.

Leaving Dublin we proceed by Stepaside to the Scalp, a dark rugged cleft in the mountains, a short distance beyond which the pretty little village of Enniskerry comes in sight, nestling among the hills, the Fuji-hama like peak of the Sugarloaf Mountain behind it, standing out clear and sharp against the sky line. Passing through the village we come to the Dargle, a picturesque glen, and further on to Powerscourt Demesne, the waterfall in which, 300 feet high, should be seen. From thence a good downgrade road winds through the hills past Kilmacanogue and bearing to the left leads into Greystones (Hotel—Grand). Starting the following morning we proceed through the Glen of the Downs, a charming spot, to Newtownmountkennedy, and on to the famous Devil's Glen and thence to Roundwood (Hotel—Prince of Wales). Close by is the catchment reservoir of the City of Dublin Waterworks.

Our next day's drive is a short one, for we have a most interesting and beautiful spot to explore: Glendalough with its ruined Seven Churches and round tower. Leaving Roundwood, the road goes through Annamoe and the beautiful Vale of Laragh, and so to Glendalough (Hotel—Royal). Any account of the Seven Churches would be impossible here, but the tourist will find fairly reliable descriptions in most of the guide books.

* The distances given are only approximate, and may vary three or four miles either way.



IN GLENMALURE.

BY CATHARINE WEED WARD.



ST. KEVIN'S KITCHEN AND ROUND TOWER.

Valley of the Seven Churches, Glendalough.

BY CATHARINE WEED WARD.

From Glendalough the road goes through Rathdrum and the Vale of Ovoca, in which gold and lead mining were carried out extensively some years ago, and we come to Wooden Bridge (Hotel-Hunter's).

From Wooden Bridge the road lies alongside the railway line as far as Aughrim, where we turn off to the right, up the valley of the Ow River to Aughavannagh, and then to the right again along the Military Road to Drumgoff (Hotel—Meath Arms). In this district the Rebellion of 1798 blazed and smouldered until the building of barracks and the laying-out of the Military Roads opened up the country, and crushed the rebellion by enabling troops to be moved rapidly through the mountain fastnesses of the rebels.

Proceeding up Glenmalur for a couple of miles we come on some delightful beauty spots, and then retracing our road as far as Drumgoff, we turn to the left, and, going along the Military Road to Laragh, we turn once more to the left and up a fine road to Wicklow Gap, on to Hollywood Glen, and then bear to the right to the pretty little waterfall of Poulaphuca and on to Blessington (Hotel—Wallace's).

Our last day's drive follows the steam tram route and proceeds through Brittas to Saggart Embankment, from above which we get a most superb view of vast extent.

The great central plain of Ireland, with Dublin on the right hand almost concealed in its own smoke, stretches away north, until one sees the far distant ranges of the Mourne Mountains on horizon, a view of at least 60 miles. The road continues on through Tallaght, where the wild Irish of the hills, the O'Byrnes and O'Tooles, in the 13th and 14th centuries made frequent fierce and successful attacks on the inhabitants of the plains. Five miles beyond this and we are back once more in the city of Dublin.

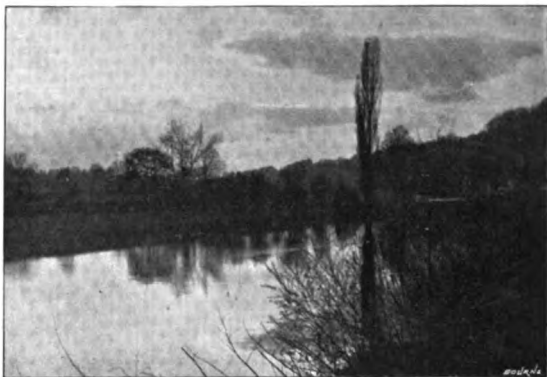
USEFUL MAPS AND GUIDE BOOKS.

McCredy's Cyclist Map of Dublin and Neigh-

borhood (McCredy and Kyle, Abbey-street, Dublin) gives all the roads, specially colored to denote their surfaces, and has the hills and beauty spots plainly marked.

Dublin, Wicklow and Wexford Railway Company's Official Guide Book contains a great deal of information, and has a very good description of the antiquities at Glendalough.

Wakeman's Handbook of Irish Antiquities (Hodges, Figgis and Co., Grafton-street, Dublin)



IN THE VALLEY OF THE LIFFEY.

By J. M. Keogh.

is a useful work by a recognised authority on the subject.

McCredy's Cycling and Pedestrian Guide to Dublin and Neighborhood contains many useful notes.

PHOTOGRAPHIC NOTES.

PLATES, ETC., must be obtained in Dublin as they are not to be had with certainty *en route*.

DARK ROOMS are scarce, but at most of the hotels no difficulty will be experienced in finding a sufficiently dark closet or cupboard in which to change plates. If the tourist makes a point of always replacing his exposed plates each night, the necessity of a dark room during the day will probably not occur.

Home-Made Bromide Paper.

By R. CHILD BAYLEY.

AN emulsion for coating paper for positive work need not differ very greatly from that employed for negative making on glass or celluloid. At any rate they are fundamentally the same, although modifications may with advantage be introduced in matters of detail. I intend to indicate briefly how such an emulsion can be made and applied, fuller details of the various operations and apparatus for which must be sought in my previous article in Vol. II. of *The Photogram* (p. 152).

The difference lies mainly in the directions of speed and cleanliness, since a bromide paper

need not be anything like so fast as a plate, and an amount of veil or fog which would not be noticed on the latter would ruin a bromide print.

Emulsification is performed in the manner previously described, the two solutions being as follows:—

Silver Solution—

Silver nitrate	..	..	..	240 grains
Water	..	..	..	5 ounces.

Bromide Solution—

Gelatine (Nelson's No. 1).	240 grains
Ammonium bromide	.. 180 grains
Water	.. .. 5 ounces.

Emulsification must be carried out at a temperature of 120° Fahr, and the liquid is then heated up to 150° and kept at that temperature for an hour, after which it is allowed to set, and is cut up and washed in the same manner as a negative emulsion.

For coating, it is melted up and should have one ounce of alcohol well stirred in. The alcohol may have two or three grains of thymol added to it if preferred. The emulsion is filtered in the usual manner, and must be coated at a temperature not exceeding 85° .

Coating the paper will be in all probability the greatest difficulty to be encountered, but there are several ways in which it can be done. Small pieces and little experimental trials of emulsion can be coated in the following manner very successfully, and it is a plan I have myself followed on many occasions. It possesses the advantage of being able to be worked right up to the last drops of emulsion made, which is not

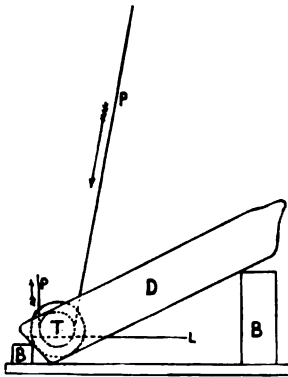


FIG. 1.

the case with the method subsequently to be mentioned, but which has counter-balancing good qualities.

For the first plan, a number of pieces of glass larger than the papers to be coated will be required, as also will a levelling slab, a squeegee (not the roller pattern, but the flat form made of a strip of sheet india-rubber doubled and held in a wooden handle) and a dish of warm water, say at a temperature of 110° Fahr. When all is ready for coating a piece of the paper is immersed in the warm water for fully half a minute, and is then laid on one of the glass plates, the side to be coated uppermost, and the squeegee passed over its surface to remove all water lying upon it and press it into perfect contact with the glass. While squeegeeing one, the next paper may be soaking, and so on, until as many are ready as the slab will hold, which should not be more than five or six. If this number is exceeded there is a danger of the last papers getting too dry before they are coated. The plates with the paper upon them are then taken one at a time in the hand and coated in exactly the same way as ordinary plates are coated, except that no emulsion should be poured off, but if too thick a coating is being employed the bulk must be thinned with a little water. They are then placed upon the levelling

slab to set, and as soon as this has taken place the paper can be removed by one corner from the glass and hung up to dry, the glasses being then ready to receive the next papers to be coated.

The second method, which was suggested to me by Mr. J. B. B. Wellington, and which is simpler and much quicker, necessitates two persons working at the same time, and can moreover only be employed with paper in lengths of not less than one or more than about four feet. The sketches of the general arrangements will make the method fairly clear.

A porcelain dish D is supported on a board by means of two wooden blocks BB, so that its bottom angle forms a trough to hold the emulsion; it is an advantage if this bottom angle can be immersed in another dish containing hot water (120°) to prevent the cooling of the emulsion, this second dish is not, however, shown. A glass rod or similar smooth, round glass object (both Mr. Wellington and the writer have used a graduated tube as shown in the sketches marked T in fig. 1) must be held by its two ends by one of the operators, and, after the paper has been put round it, is pressed down to the position

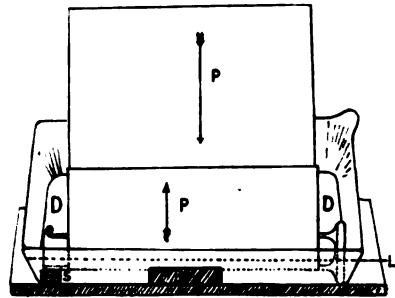


FIG. 2.

indicated. The foot of the graduated tube answers very well as a support at one end, and at the other a little block can be used S (fig. 2) to keep the tube horizontal. The dish being filled with emulsion to the level indicated, the tube or rod is wiped clean and the strip of paper put round it, in the way manifest from fig. 1. Then one operator, holding the two ends of the tube, plunges it below the surface of the emulsion until it rests on its supports, while the other holds the two ends of the paper band so that it clasps the tube tightly. In this way no emulsion gets on the back of the paper, to ensure which, care must be exercised that the level of the emulsion is never as high as the centre of the tube. As soon as the tube is in position, the operator holding the paper pulls the lower end slowly and smoothly upwards, allowing the other hand to be pulled down, and the paper gradually to run round the tube, keeping a certain amount of tension on it all the while.

The motion must be quite smooth and even and without a pause, the quantity of emulsion depending on the rate at which the paper is pulled through; the quicker this is done the more emulsion there is taken up. When the end of the strip is drawn close to the tube, it can be left go, and the coated strip, after waving it gently in the

air for a minute or two, may be hung up to dry. The tube can then be removed, wiped clean, and a new length of paper coated in the same manner. It economises emulsion to cork up the open end of the tube, and to tilt the dish until the angles made by its bottom and side with the board are equal. The two hands must be kept close together, so that the ascending coated part and the descending uncoated portion of the paper travel parallel to one another, separated only by the width of the tube or rod round which the paper is running. In this way strips of Rive's paper or of drawing paper can be coated satisfactorily with the emulsion far quicker and with much less trouble than by the previously described method, and it really requires very little practice to achieve success.

The drying of the paper, however coated, is best effected by hanging it up in a drying cupboard as used in plate-making, and calls for no special comment. Paper prepared by this formula will be found to answer well with ferrous

oxalate, metol or amidol development, the exposure required with an average negative being about ten seconds at eighteen inches from a gas-burner; it varies with different batches of emulsion, but can easily be ascertained by experiment.

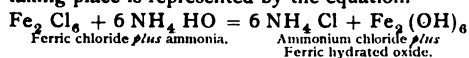
The likeliest causes of failure are unsuitable gelatine, a pure, soft variety is the most suitable; fog, which is, of course fatal in bromide paper; and unsuitable paper inducing spots and blemishes of one kind or another. If these pitfalls are avoided, there is no very great difficulty about the manufacture at home of a small quantity of good bromide paper. While for professionals, and indeed for amateurs also whose interest lies not so much in the processes of photography as in its pictorial or equally important applications, it is simpler and more satisfactory in every way to purchase their printing papers; those amateurs whose tastes incline towards the experimental side of the craft will find the process both interesting and instructive.

Preparation of Ferric Oxalate and Chloro-Platinite of Potassium.

BY EDMUND A. ROBINS.

IN the production of ferric oxalate by the under-mentioned methods, a most important point to notice is that the chemicals used are perfectly pure, and that they are procured from a reliable chemist, as a very slight trace of ferrous salts entirely impairs the clean working of the subsequently produced paper.

Ferric oxalate can be produced in a number of ways, two of which I give as being the most simple in practice. In the precipitation of ferric hydrated oxide from ferric chloride by ammonia, the reaction taking place is represented by the equation.

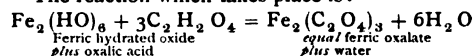


The hydrated oxide falls as a very bulky foxy-red precipitate, having mixed with it the ammonium chloride. A quantity, say 1lb = 453·5 grams of ferric per chloride. A light yellow delequescient body, generally occurring in roundish masses, is obtained from a chemist (the ordinary commercial article is not pure enough), and is dissolved in 40 ozs. = 1136cc of water in a strong glass-stoppered bottle (a Winchester quart is a useful size), a great amount of heat being generated when the precipitation takes place, and the bottle is liable to burst if it be not strong. Ammonia is then added, about 1lb. = 568cc is generally sufficient, of the strength ·880, to complete the precipitation, the slightest excess of ammonia is advisable, to ensure all the precipitate having come down, it is then allowed to stand for some hours, and is then ready to wash free from ammonium chloride and free ammonia.

This is best done by putting precipitate into a clean linen cloth. All the adherent liquid squeezed from it by gathering up the ends of the cloth and screwing them round, the water being forced

through the linen. The partly dry precipitate should then be well soaked in a number of changes of boiling water, until all traces of ammonia have gone. The ferric hydrated oxide formed will keep any length of time, and is now ready for conversion into ferric oxalate. Up to this stage all the operations may be conducted in daylight, but from now they must be continued in gas or other non-actinic light, the ferric oxalate being very sensitive to daylight. The ferric hydrated oxide is placed in a clean stoppered bottle of about 40 ozs. capacity, and 10 ozs. = 284cc, added, of distilled water. The bottle should be of an orange color, or else covered round with brown paper to exclude any white light; 6 ozs. = 181·5 grams of pure oxalic acid (crystals) is now added and the solution left for some days to dissolve.

The reaction which takes place is:



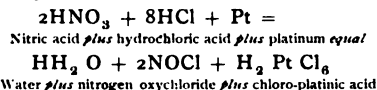
The oxalic acid dissolves the hydrated oxide, forming ferric oxalate and water; the whole should be dissolved and the temperature should not rise above 30°C. The ferric oxalate should have an acid reaction as tested by blue litmus paper, or methyl-orange is a more reliable method. A drop of methyl-orange being placed on filter paper, and a drop of the solution placed beside it, a red coloration at the point of junction of the two drops, showing an acid reaction. Blue litmus is not reliable with some organic acids. Should the solution be not acid, oxalic acid in crystals should be added until it is decidedly so. The resulting ferric oxalate is of a dark green tint having no yellowish tinge—this last shews the reactions have not been very successful; it should be tested by a solution of potassium ferricyanide for the presence of ferrous

compounds, a dark blue precipitate indicating their presence, a brown that of ferric salts.

The density of the iron solution should be about 100 grains of ferric oxalate = 6.5 grams to the oz. = 30cc; it should be kept in a well-stoppered bottle well protected from light, when it will remain fit for use for some months, but should be tested by potassium ferrocyanide before using if it has been kept for any length of time. A temperature much above 30°C tends to reduce to ferrous compounds, when the solution is useless for platinotype. If pure ferric hydrated oxide can be obtained, the operation can be started from the point of addition of the oxalic acid, the method being the same. Caustic soda can be substituted for ammonia in the above and obviates the unpleasantness arising from the employment of strong liquid ammonia in large quantities. 250 grams = 8ozs. of pure stick caustic soda is dissolved in water and added to the solution of ferric chloride, the precipitate being washed until all trace of alkali is removed, as tested by red litmus paper.

Chloro-platinite of potassium = K_2PtCl_6 . 50 grams = 771.5 grains of platinum chloride dissolved in 100cc of distilled water, and the solution heated to 100°C in a water bath. At this temperature sulphurous acid gas, produced by heating copper or mercury with sulphuric acid and washed by passing through water, is passed through the solution, which changes to a reddish color, a drop being taken now and again and

tested with ammonium chloride solution, a white precipitate occurring as long as there is any platinic chloride left. Directly the precipitate ceases the gas must be stopped or sulphur compounds of platinum will be formed. The solution is evaporated down to a small bulk, and allowed to crystallise, when the reddish crystals of chloro-platinite of potassium are formed. These should be separated from the mother liquid, which contains platinum about 25 per cent. in solution, and dried in the dark, as these crystals are decomposed by light when in a moist state. It can also be obtained from platinum. Dissolve 100 grains = 6.5 grams of platinum foil in about 2½ozs. = 71.5cc of aqua-regia with following reaction:—



Evaporate to a small bulk, add strong hydrochloric acid, heat to expel free chlorine, evaporate to a thick syrup, and crystals of chloro-platinic acid will separate out.

Dissolve crystals in distilled water, pass sulphur dioxide or sulphurous acid gas as directed above, following instructions as to when the flow of gas is to be stopped, add 100 grains = 6.5 grams of pure potassium chloride and evaporate, and the crystals of chloro-platinite of potassium, separate out on cooling.

Thermographic Images.

By C. F. TOWNSEND, F.C.S.

THERE are many vague ideas in circulation as to the action of heat, pressure, electrical discharge, etc., on gelatino-bromide dry plates. Most of the current ideas on these points are based on the so-called thermographic experiments of Hunt, and, as a knowledge of the conditions under which effects on dry plates are produced by metallic contact, etc., might prove interesting in connection with the discovery of the photographic or electro-graphic effect of the X-rays, I have, at the suggestion of the editors, made a few experiments in this direction.

From reading Hunt's book I expected to get results with little difficulty, but found that it was by no means so easy to obtain developable images by either heat contact or pressure. As every photographer knows, unlooked-for results that mar our best negatives are easy to obtain when they are not wanted and the presence of these markings is often difficult to explain. As regards Hunt's experiments, I could hardly hope to obtain similar results, as he worked with a plate of polished metal, and developed with mercury vapour. I was rather surprised, however, at getting no results whatever with dry metal on a dry gelatino-bromide plate. I tried a cold penny, one warm out of my pocket, and another almost

too hot to handle, and left them in contact with the plate for some time before development; the result was *nil*. Even when placed on the plate damp, so as to secure better contact, no result was obtained. Pressure on the coin applied for some time with the thumb was equally non-productive of result. Wet pennies and half-crowns on a dry plate did give results, the image of the half-crown being quite as good as that of the penny. In this experiment some of the coins had been placed under the cold water tap; some in water at ordinary temperature; and some under the hot water tap. The hot and cold coins gave results, but the intermediate images were hardly discernable. The images were incomplete in all cases, as it was found impossible to get entirely rid of the air between the coin and the plate.

I was rather surprised at the silver giving as good a result as the copper, if the images were due to electrical action between the emulsion and the metal, but the images must have been produced by the thin



film of copper on the surface of the silver coins, owing to rubbing against copper coins in peoples' pockets. In all subsequent experiments the coins, both silver and copper, were cleaned by immersion for a few minutes in strong ammonia, and from this point the silver coins gave no effect worth mentioning.

Before obtaining a really successful result, I tried covering the plate with thin filter paper moistened with very dilute acid, and placing the coins on that. Contrary to expectation no image was secured, after leaving the coins in contact for a long time, and giving the plate a lengthened development.

The best results, giving perfect images, as will be seen from the accompanying illustration, were produced by soaking the plate in water for a few

minutes; pouring nearly all the water out of the dish, so as to leave just a film over the surface of the emulsion; holding the coin under the hot water tap and placing it on the plate, working it gently round two or three times to remove air, and fixing it in its place by very gentle pressure. The coin should be left for two or three minutes after the developer has been poured on the plate, and then removed. Hardly any image will be obtained if the coin is allowed to remain for some time after the plate is in the developer.

From this it will be seen that some of the results supposed to have been obtained with the X-rays, that were attributed by many people to thermographic effects, could hardly have been due to either heat or contact, and deserve to be received with a fair amount of credence.

Some Useful Suggestions.

A DUST PROOF PLATE DRYING COVER.

By F. W. COOPER.

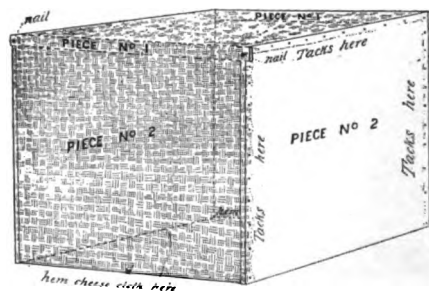
NOTHING causes greater annoyance to the photographer than to find, after making a number of satisfactory negatives, or transparencies, that they have got covered with dust in the drying and have to be re-washed before a satisfactory print can be made, or the transparency bound up for use. If the rack containing wet plates be put in a cupboard, they take a very long time to dry and are not always free from dust; if placed in a current of air, they are sure to collect some specks of dust which the gelatine film seems to have a very great liking for. To prevent dust reaching them and get them to dry quickly, the following is a good method.

Procure the following material :—

No.	Wood.	Sizes for $\frac{1}{4}$ -pl.	Sizes for $\frac{1}{2}$ -pl.	Cost
1	2 pieces, planed	7in. x $\frac{1}{2}$ in. x $\frac{1}{4}$ in.	7in. x $\frac{1}{2}$ x $\frac{1}{4}$	2d.
2	" "	7in. x 5 $\frac{1}{2}$ in. x $\frac{1}{2}$ in.	5 $\frac{1}{2}$ in. x 4 $\frac{1}{2}$ x $\frac{1}{2}$	2d.
3	Cheese cloth from Drapers - -	$\frac{3}{4}$ yard - - -	$\frac{1}{2}$ yard - -	
4	4 nails—tacks -	4 rin. wire nails &	1d. sm. tacks, 1d.	

Bore a hole in both ends of the two pieces, No. 1 about a quarter of an inch from the edge, drive a nail through each into top of four corners of pieces No. 2 and so construct the frame as shown in sketch, then after having turned up the two edges, which will rest on table cover with the cheese cloth, fasten with tacks to the end pieces, and with needle and thread along the top pieces. This cloth is a fine netting—course muslin will do, but cheese cloth is stronger. It is advisable to make the half-plate cover while doing the work, as it has more space for plates and may be used for any size up to half-plate; the quarter-plate sizes are given for those who prefer that the cover should just fit the rack. The measurements are suitable for the majority of square racks now in the market; of course they may have to be varied to suit special racks or for large sizes. It would be an easy matter to add an inch or so to

the sizes given, or to even make the frame double the length so as to contain two racks for drying twenty-four plates at a time. When not in use the cover can be closed up, and will occupy very little space when put away. A rack full of plates,



if placed under this frame on a chair or table, between a door and open window, will dry very quickly—of course the sides of cover should be placed so that the air will pass through the net-work.

DISCOLORED ALBUMEN PAPER.

Le Bulletin de la Société Caennaise gives the following instructions for utilising old albumenised paper:—Print considerably deeper than usual; wash prints before fixing, in warm water, at a temperature of 100 to 125 degrees Fahr., and tone in a bath composed of

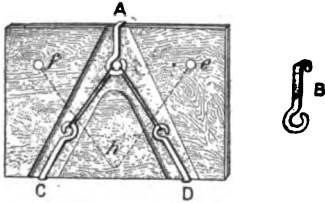
A.	Water	6 oz.
	Chloride of gold ..	6 grs.
B.	Water	6 oz.
	Precipitated chalk ..	150 grs.

Shake the solution well and mix, then add one drop of hydrochloric acid. Shake the mixture well, and allow to stand twenty-four hours before using. After toning, which will be a little slow, wash and fix in the ordinary way.

FRAMES FROM SPOILT NEGATIVES.

A CAPITAL idea for using up old negative glass is sent by C. R. Taunton, of Dublin. The following are his directions and explanatory diagram:—

Take a piece of thin wood the size of the glass, and cut in it a groove C.A.D. From some thick copper wire, bend with pliers three pieces like B, hammering them flat after turning the loop, but before turning the hook. Connect



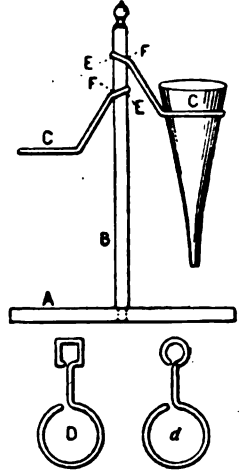
these with elastic and fit them to the wood and glass, as shewn in the principal diagram. At *f* and *c* insert staples made of wire, and connect them with thinner wire (as represented by dotted line), to form a supporting strut for hanging or standing the frame on wall or table.

If intended for standing, it is well to put another staple (or picture screw-eye) at *h*, and connect it and the support by a piece of thread, to prevent too great an extension of the strut. The edges of the glass can be smoothed on a piece of flag stone, or bordered with gold paint.

A CONVENIENT SUPPORT FOR A FUNNEL.

THE accompanying sketch from the *Photo Gazette* shows a convenient support for a funnel

while filtering, &c. A round or square upright is secured to the centre of a board, about 8 by 12 inches. A piece of stiff wire is bent so as to encircle it, the end being bent into a square or round shape, according to the section of the upright (D.d.) The other end of the wire is bent to a circle large enough to hold the funnel near the top. Vertically, the wire is bent to the shape shown in the sketch. The friction at E. and F., due to the weight of the funnel (C.), is sufficient to secure the latter at any desired height. The funnel may be raised or lowered by taking hold of the wire, and its weight is sufficient to lock it immediately at any desired point.



The Autocrat of the Workroom.—Toning Bromide Paper and Opals.

IN spite of every care exercised in development, makers of bromide prints on paper and opal are frequently troubled with tones that are far from pleasing.

Especially is this the case when developers other than ferrous oxalate have been used; but as the newer developers have advantages far outweighing their faults, they are not likely to be lightly cast aside.

Sometimes, owing perhaps to incorrect exposure or a poor negative, the color of the developed print is a greenish or yellowish black far from pleasant. Other times it happens that the shadows are developed too dense in proportion to the high lights, so that the balance of tone is upset.

Again, it may be perhaps that even an agreeable cold black is not altogether the most suitable color for the subject in hand.

In all these cases the tone of the prints can be modified to almost any extent by the use of gold, uranium, copper or iron.

As a rough guide to the color given by salts of the various metals, we may take the following general lines: gold gives a rich blue-black, with grey half-tones; uranium yields warm browns, from a dark chocolate to a brownish red; copper gives a range from lilac-black to a bright red; iron gives a rich deep, or bright pale, blue, according to time of immersion.

Perhaps the most general fault in a bromide print developed with (say) hydroquinone is a

greenish black when a blue-black is wanted. In order to correct this color we must make up a bath of gold chloride and ammonium sulphocyanide, in about the following proportions:—

Ammonium sulpho-cyanide ..	30 grains.
Water to	10 ounces.
When dissolved, add—	
Gold chloride	2 grains.

The print must be washed for a quarter of an hour after fixing, and may be toned in a porcelain dish in daylight. The print should be immersed face downwards in the solution, and then turned face up and freed from air bells. Toning will start at once, and the tray must be agitated until the action has been carried far enough. If toning is prolonged, the high-lights are sometimes prone to take on a bluish or violet tinge. As soon as the desired tone is reached, the print must be washed in several changes of water. If the prints are to be mounted wet, they had better be soaked for about ten minutes in an alum bath, when they will bear any amount of handling.

The tones given by uranium are altogether different in their action, gradually changing the color of the print from a brownish black to a dull red. I have found the following a serviceable bath for the purpose:—

Potassium ferricyanide ..	10 grains.
Dissolved in water	10 ounces.

Then add acetic acid . . . 4 drams.
And finally uranium nitrate
(10% sol.) . . . 2 drams.

The mixture will not keep, so must be used within half-an-hour.

In this case, also, it is advisable to use the toning bath in a porcelain tray; the print must be *thoroughly* freed from hypo, or the details will suffer and stains appear. After about a minute's immersion the shadows will begin to pass through various shades of brown, growing redder the longer the print remains in the bath. As soon as the desired tone is reached, the print must be plunged into clean water and placed, preferably, beneath a rose tap from which a fine spray is allowed to play over the face of the print. The white parts of the print will be intensely yellow after removal from the toning bath; this is due to the staining action of the ferricyanide.

Washing will remove the stain; but if the washing is unevenly performed the stain will be discharged unevenly. Care must therefore be observed to prevent the washing water from playing persistently upon one part only of the print. The yellow stain should be discharged in about fifteen or twenty minutes; the print may then be mounted or dried. Prolonged washing is worse than useless, since it entirely removes the uranium deposit and reduces the print to something poorer than its original condition. The removal of yellowness from the whites of the print is a sufficient indication that washing need not be further continued.

Pleasing red tones are given to bromide prints by certain salts of copper. Make a one per cent. solution of copper sulphate and add to it a saturated solution of ammonium carbonate, until the precipitate, first formed, is re-dissolved. Then add potassium ferricyanide in the proportion of three grains to each ounce. The prints must be well washed before immersion, and the toning takes place somewhat slowly, beginning with a lilac black and ending in bright red. When toned sufficiently the print must be well washed. For blue tones the print must be immersed in a bath of—

Ferric oxalate . . . 5 grains.
Potassium ferricyanide . . . 5 "
Water to . . . 20 oz.

The print soon assumes a rich deep blue color, gradually becoming more like an ordinary ferro-prussiate print. For the best results it is best to remove the print before toning has proceeded too far, the color will then be very fine.

Bromide prints in which the contrast is too pronounced can be improved by immersing in a bath of—

Potassium bichromate . . . 15 grains.
Alum . . . 75 "
Hydrochloric acid . . . 1 dram.
Water to . . . 4 ounces.

Until thoroughly bleached. They must then be well washed and re-developed in daylight until the details and shadows are sufficiently dense. After washing the prints must be passed through a hypo bath and once more washed.

Should the color not be satisfactory, after thus correcting the density, it can be easily altered by means of any of the baths I have enumerated.



The Speed of Plates.

E. J. Wall opens the matter.

THE question of the speed of plates will for some time be a vexed one. I do not believe that any system now in vogue is perfect, although we accept one as the best, failing a better. The weak point, in my eyes, of all existing systems is the use of an artificial light for testing purposes, and the estimation of the sensitiveness by visual examination. We do not use our negatives as pretty objects to look at, but rather as means to obtain prints or transparencies, therefore the photographic value of the silver deposit should be taken into account, and how much this is influenced by color everybody knows. What Captain Abney says in his little primer on "Instantaneous Photography," page 68, should be very carefully considered by all when talking of the speed of plates. "One winter lately, at Rome, the writer exposed two brands of plates, both supposed to have the same rapidity, on the same subject. With the one, the highest lights to the deepest shadows were harmonious, and the details in all parts shown. With the other, though the same detail was to be found, it was not printable in both the shadows and in the high lights: a careful measurement of the transparencies of the plates, when exposed in artificial and in daylight, showed that for camera images the first was really more sensitive than the second, though this was not to be discovered by the artificial light."

J. Cadett wants a competent Committee.

The question of speed is a very vexed one, because so few people understand anything about it. I do not agree with Mr. Wall, that the weak point of all existing systems is the use of an artificial light, as this can be allowed for by suitable daylight factors. Daylight, in its quality, varies very much, and, therefore, if the quality of daylight is to be taken as a standard, it must be used about twelve o'clock in the day, on a day of average brightness. For the particular kind of emulsion used, a separate daylight factor would have to be made, according to the artificial light used; this being done, a constant is established which enables artificial light to be used quite easily. The photographic value of the silver deposit does not affect the speed question as regards its color unless such color be dichroic in its nature. To a slight extent pyro developed negatives are dichroic, but it is so small a matter as to be practically, though not theoretically, outside the question of speed testing.

The point raised by Mr. Wall with regard to what Capt. Abney says in his little primer, on page 68, can only be taken into account on those portions of the negative which do not obey the correct and simple law, namely, that opacities should be proportional to the light intensities that produced them. Messrs. Hurter and Driffield, to my mind, though I have not yet fully tested the question, seem to prove that a properly exposed negative has its principal portion within the period of their so-called correct exposure. It is very satisfactory to find that Capt. Abney and Mr. Elder are both agreed that the speed of a plate cannot be measured from a single density; this narrows the question into a very simple one, and it only wants a few careful trials with the camera and photometer to establish whether Messrs. Hurter and Driffield are correct or not in their statement that the period of correct exposure embraces the major portion of a properly exposed negative. Inasmuch as a straight line must be formed somewhere when we plot a chart of the densities of any plate having a series of exposures geometrically prepared, this straight line seems to be the best possible starting point for a calculation of the speed of plates.

It would be admitted by all discussing the argument, that no negative can be true in its representation of opacities with regard to light intensities unless its principal portions come within the period shown by the straight line. It would, I believe, be generally admitted that all exposures outside these are not correctly represented on the plate. The point in dispute against Messrs. Hurter and Driffield seems to be that the main portion of the correctly exposed negative does not lie within this straight line period, through some fault of the plate, or rather all plates. This, however, I feel certain, on careful trial, will be found to be an error. I shall carefully test this question myself, and report upon it to the Royal Photographic Society.

Speed is now admitted to be a question of development as well as of exposure, and, therefore, in speaking of the speed of a plate we can only speak of it in relation to the developer used with that plate. For speeds to be constant amongst various brands of manufacture, everyone must work under similar conditions, and this has never been agreed upon; hence the sneers which have been directed more or less against all systems, no matter whether good or bad. I consider the committee appointed by the Royal Photographic Society on speed testing, taken generally, as incompetent to do the work, though they have one or two members who understand the question.

Dr. J. J. Acworth makes a strong appeal for getting the most out of a plate, as everybody does in practical work.

The various and complex factors to be considered in estimating speed, make the elaboration of a perfect system one of great difficulty, if not impossibility. Of the two scientific systems in vogue, one, that of Captain Abney, professes merely to give relative speed numbers which will be found to be of practical value. The authors of the other, Messrs. Hurter & Driffield, have claimed

so much for their system, and made so many remarkable and astounding statements that their system has been subjected to much criticism, and this has probably led to the greater attention which has been paid to it. The relative value of the systems, however, can only be gauged by those who have practical experience in the working of both, with all varieties of plates; but the expression of the reduction product in "transparency" units is certainly more intelligible than in "density" units.

Regarding the point raised as to the comparison of the speed values of different brands, "similar conditions" at least as regards the developer, will not be accepted, or indeed, are they comparable for any developer whatever will suit the plates of some manufacturers more than others. In my opinion, the only comparable method is to test the various brands, not with the same, but each with that particular developer recommended by the makers, as giving the greatest rapidity, or the best result.

Each plate is then represented at its best, and only then can a true and just comparison be made.

Messrs. Hurter & Driffield regret that such dogged opposition should be shown to their system.

Increased experience in the application of our system of speed, determination has served to strengthen our opinion of its practical value. It has been a matter of deep regret to us that our method has met with so much antagonism from individuals who have, at any rate, no better to propose. While we have gratefully to acknowledge the efforts of Messrs. Marion & Co., and of Messrs. Cadett & Neall, to work our system fairly, and while we believe their speed numbers are fully to be relied upon, the temptation to excel in the matter of speed has led to so much exaggeration in other quarters, in spite of our earnest protests, and has no doubt, in the public mind, so seriously injured our system that we have more than once felt ready to abandon further efforts, and allow time and public opinion to work their own remedy.

If our system has done nothing else, it has at least established a method of experimental investigation such as never existed before. Since we published our original paper, the adoption of our units and methods has brought out the fact that there are plates of wholly different behaviour to different developers; some plates behave exactly in accordance with those used in our original investigations, while others differ, specially with regard to different developers. Our methods have provided plate manufacturers with a means of investigation, whereby they are now in a far better position to control the speed and other characteristics of the plate. These discoveries have also rendered it necessary to adopt much greater precautions against error than our experience had originally suggested, and it has become apparent that speed testing can only be carried on under carefully defined conditions. We have done our best to lay down such conditions, but the stumbling block in the way of general recognition of our system is that, without support, we are powerless to insist upon these conditions being carried out. Obviously, chaos must result if each plate-maker is to set up his own standards, and we are con-

vinced that uniformity will never come about till a properly constituted and acknowledged authority decides upon the standard conditions to be observed, and gives its support in calling to book any plate-makers who, while professedly using our system, quote speeds other than in accordance with these conditions.

We have frequently cause to complain that our work is criticised by individuals who do not understand it, and have not studied all that we have written. Unfortunately the time that we have to devote to the subject is so limited that we are quite unable to meet the misleading statements made from time to time.

Mr. Alexander Cowan cannot speak too highly of it.

After four years daily use of the system of speed determination, introduced by Messrs. Hurter & Driffield, I can only speak in the highest terms of its thoroughly practical reliability. One thing should be noted when testing various plates together, that the speed determination should be made with a developer similar in composition to that intended to be used with the plates, and that instead of all being developed for the same length of time, each one should be carried on till it arrives as nearly as possible to a given development factor.

W. E. Debenham attacks the question from the practical worker's point of view.

The first great difficulty that arises in an endeavour to settle a method for the determination of the speed of plates is a question as to whether all plates are to be treated by some specified method of development, and whether each plate is to have that treatment with which it will yield the best result. It appears to me that the latter is certainly the proper method, unless some developer is found which will do equal justice to all makes of plates when applied for a given time and under corresponding conditions of temperature. Even when the same composition developer is employed, one plate may require, in order to bring out the last details, an immersion of such length as to hardly fog another plate, and to fix and develop these plates identically must fail to do justice to one or other of them.

Another point is the contention that only that portion of the image is to be taken into account which comes within the "straight line," and "period of exposure" of Messrs. Hurter and Driffield.

Whilst recognising the advantage for the determination of speed and noting the direction of the "straight line," however short, it may be observed that where two curves of an opposite character occur in the same continuous line, it is open to doubt (unless measures of an extremely exact kind are taken) whether the straight line is anything more than an infinitely short one. However, its direction can be sufficiently ascertained from an inspection of the opposite curves. The idea that the only portion of the exposure which need be considered is that coming within that straight line is, I think, entirely a mistaken one. In order to sustain this contention, it is apparent that the difference can

illumination between the lightest and darkest portions, and that subject is only about 20 or 30 to one. Now, that is about the difference between white and black paper when both are equally illuminated, but in nature we have, to say nothing of the sky itself, light objects with the full glare upon them, and dark objects themselves in shadow. Mr. W. K. Burton, in the December number of the *Journal of the Royal Photographic Society*, says that "the ordinary sunlight landscapes that range and light to be dealt with, is commonly as one to several hundreds, often more," and in this, I believe, he is far nearer to the truth than are Messrs. Hurter & Driffield.

Alfred Watkins enquires

Which speed?—Mid-day pure light, sunset light, candle light, or flash-light speed? Any attempt to give this as one value must be approximate only.

Messrs. Hurter & Driffield's system of taking the "period of correct exposure" is in its main idea correct, and will, I think, form the basis of future systems.

But to measure densities and transparencies by optical instead of photo-chemical methods is surely weak. The pyro developed image consists of the black silver deposit, and a transparent yellow-brown stain varying in intensity with the light action. Can a photometer deal with this pure eclat stain?

Again, the Hurter & Driffield method of dealing with fog is weak. I find experimentally that fog indeed towards close of development is added to lower gradations and not to upper ones. Hurter and Driffield, in making allowance for fog, deduct it from all gradations. These weak points would not cause inconvenience were it not for the unhealthy striving of advertising makers to find the developer which gives the highest Hurter and Driffield reading with their plates, though not a higher speed to the photographer.

The system of marking two speeds (given by different developers) is confusing to the user who probably uses his own favorite developer, and merely wants the rotative speed of this box to one previously purchased from this or another maker.

The Map of the Heavens.—The Astronomer Royal, speaking at the last meeting of the Royal Astronomical Society, gave some interesting particulars as to the international chart of the heavens. A special staff has been formed for the work, and already 130 plates have been measured. In the section apportioned to Greenwich, 150,000 stars will be examined, and the whole section completed in about six years. If the other observatories work at the same rate, there will be, in six years, a complete catalogue of over two million stars.

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Nature and Properties of Black Light.

By G. LE BON.

BEFORE describing the results of my new experiments, I have the honor to inform the Academy that my observations regarding the passage of common light through opaque substances have been repeated, with complete success, by several experimenters, in particular by Dr. Arméniaç, of Bordeaux, and M. Murat, at Havre. The latter, by carefully following my instructions, succeeded in obtaining, with black light, more satisfactory effects than those secured with the Röntgen rays. Black light and the rays of cathodic origin are assuredly not similar radiations, for black light does not pass through such substances as ebonite, which are quite transparent to the Röntgen rays.

M. Murat sends me photographs of the inside of a fish, which I have the honor to present to the Academy. They display a kind of successive dissection, layer by layer, which could not possibly be obtained by rays of cathodic origin, as I shall explain in another article. The light of a common lamp, transformed into black light by the method I have described, viz., its passage through metal plates, gave the effects in question.

In my first articles I only wished to give the crude conclusions of my studies, but they appeared so unintelligible that it is requisite to explain the theory which led to their performance, and enabled me to foresee their possibility. The object I had in view was to explore the hitherto unknown boundary separating the kingdom of light from that of electricity. I supposed, as I remarked in concluding my first article, that the forms of energy must be infinite in number. We only know of some, like heat, light, and electricity. These known forms must admit of connection by intermediary forms; the latter are yet unknown, because we have no instruments capable of rendering them perceptible to our senses. In order to discover one of these modes of intermediary energy, it was first requisite to find an instrument which could show vibrations less numerous than those of light and more numerous than those of electricity. As photographic plates are sensitive, under certain conditions, to vibrations relatively small in number, situated outside of the visible luminous spectrum, it was to be expected that they would be sensitive to much less numerous vibrations. If such were really the case, we should be exactly in the intermediary boundary between light and electricity. But then this new form of energy should possess some properties interjacent amongst those of light and electricity. It was not, perhaps, any longer, propagated like light, and might be in the same way as electricity. In this last case the vibrations should not be arrested by opaque metal substances, whatever their thickness.

In order to prove the accuracy of these ideas, I devoted two years to experiments, of which hitherto I have only given the most incontestable conclusions. Without theory as a guide we should have failed as in the first experiments. Demonstration of the passage of light through thick metal plates was somewhat rapid, but the effects obtained were accompanied by partial failures,

which, for a long time, were a source of embarrassment. In most instances the image was perfect on the outer edges of the glass or in the centre; then suddenly stopped. By employing two metals the experiment was either favored or impeded. Thus, for example, the presence of a sheet of polished tin behind the sensitised glass prevents the passage of light through the aluminium plate covering the negative. Sometimes equally satisfactory effects were obtained by placing the glass before or behind the negative. Sometimes the image was negative, and sometimes positive. Evidently electric influences intervened, but it was also evident that the effects produced were really due to the action of light, because all the experimental conditions being equal, the images were only obtained when the light fell on the opaque plates shutting the printing frame. I shall explain, on another occasion, how by means of an infinitely sensitive instrument (a galvanometer with movable frame, in an intense magnetic field produced by an auxiliary current of 30 volts and two ampères), I hope to be able to illustrate the evolution of electricity during formation of the ordinary photographic images. For the moment I merely intend to describe the experiments regarding the passage of light through opaque substances, and the transformation which it there undergoes.

In the following experiments each negative receives two sensitised glasses, one on its top part and the other on the lower; one of them was employed as standard—that is to say, its object is to show by a preliminary repose of the frame and contents in obscurity, that the image produced on the glass covering the second part of the negative is produced only under the influence of black light. Thus are completely removed all the hypotheses which might be made as to the causes of formation of the image; stored light, pressure, heat, electricity, &c. Only the light which has passed through the plate and been transformed into black rays, produces the image, because outside of this light the image is never produced.

Now we come to a series of experiments which would seem very contradictory were it not for the theory which I have explained, and if we considered that black light should, like ordinary light, be propagated always in a straight line. The printing frame being covered by one of the metals already mentioned, aluminium or iron, for example, one-half of the metal plate is in turn covered with ten sheets of black paper superposed, amply sufficient, with the exposure we employ, to arrest formation of an image on a sensitised plate exposed under a negative. Now, in development we find the image exactly equal in intensity in the part covered only by metal, and under that where the metal supports ten sheets of paper. If we place on this same metal plate big iron discs, several centimetres in thickness, we again observe that these discs, in spite of their thickness, leave no trace on the image. These experiments, which were repeated with all kinds of variations, are fundamental. They firstly demonstrate that the degree of thickness of the opaque plates is of

no importance for passage of light, exactly as it would be for that of electricity.

These experiments also demonstrate that black light follows, in propagation, different laws from those of ordinary light. In fact, if black light were propagated in a straight line, the parts of the negative protected by the discs and sheets of paper placed above the metal plates would be marked by a shadow on the glass. But if black light be subject to the laws of the propagation of electric waves, the reception of some rays on a point of the metal suffices for propagation of these rays over all its surface. Light can then be transformed into radiations which are propagated like electric currents. They are not, however, electric radiations, because ordinary electric currents do not give the same effects. We are then confronted with a mode of energy which is not light since it has but a part of its properties, and does not follow its laws of propagation. This form of energy is not electricity, either, because such effects are not given by any of the known forms of electricity. *Black Light* must, very probably, be regarded as a new power to be added to the few already known.

Obituary.

Mr. Thomas Samuels, the *doyen* of the Chancery Registrar's Department, died on Sunday, March 1st, at the age of sixty. For many years he had held the office of churchwarden of Hadley, Barnet, besides that of trustee to most of the local charities, and was formerly a member of the local board. But it is principally as an amateur photographer of distinction, and the inventor of highly



ingenious cameras and apparatus, that his name is most familiar to the general public. He claimed to be the inventor of the hand camera; and, as a matter of fact, nearly all the best instruments of the kind contain more than one patented feature, the result of his resourceful brain. He was a member of the London and Provincial Photographic Association, and the Photographic Club.

Editorial Notice.

Contributions are solicited from all who have **FACTS** or **NEW** ideas to communicate. They must be concise; brief, if possible, and written on one side of the paper only. The sheets should be fastened together, and the contributor's name and address on one of them. Contributors must say whether they expect payment for their matter or not. Unaccepted contributions will be returned to senders if a stamped, addressed envelope accompanies them for that purpose.

The roughest of diagrams (so long as they are intelligible to us) may be sent, and will be re-drawn by our staff.

Payment is made, when required, at the rate of 15s. per page. Short notes are only paid for by special agreement. Contributions of special importance, and those that involve original research, are entertained on special terms. Diagrams, when sent as unfinished sketches, are measured up in the page as matter. Drawings ready for reproduction are subject to special agreement.

Unless Payment is distinctly asked for, we accept all articles on the understanding that the usual complimentary copies of the magazine will be considered sufficient honorarium.

A Free Reading-room is open during office hours. The world's photographic, printing trades and kindred journals, filed. Reference library, lavatory, dark-room, etc. On Wednesday evenings during the winter months (October to March inclusive) the room is open until nine o'clock.

Hours of Attendance.

Members of the staff can always be seen at the office by appointment. Otherwise the attendance is uncertain. As far as possible, the following hours will always be spent at the office, and those who can do so are specially requested to call at these times:—

H. Snowden Ward ... Daily, 11 a.m. to 12.30 noon.

Always send enquiries by letter, if possible, in preference to personal call.

The Office is open for business from 9 a.m. to 6 p.m.; Saturdays, 9 a.m. to 1 p.m.



We regret that in our notes on the London and Provincial Association last month the name of R. P. Drage was omitted. During a long period of the most successful life of the association, he acted as its secretary.

Our Illustrations.—Most of the blocks in this issue are the work of A. Bourne & Co., 73 Ludgate Hill, E.C., a firm established in 1886. The staple lines of this firm are half-tones on copper, linework on zinc, and woodcuts. They also produce hand-engraved half-tones on copper, with any amount of finish desired. It is hardly necessary for us to say anything regarding the high grade of work produced by them, since most of our half-tones this month are specimens of their skill. Their specialty is half-tone on copper; their watchword: "Punctuality."

Mendel Howard Fund.—We regret that our further investigation of this case has induced us (after consultation with the principal contributing) to relinquish our attempt. The amounts subscribed have been returned to those who contributed them, and although the funds came in better after our last appeal than after the first one, we think it is not necessary to give a list of subscribers.

Competitions No. 4 and 5.—Up to the time of going to press it has been impossible to make the awards in Classes 4 and 5. So much thoroughly good matter has been received that we feel it incumbent upon us to take the individual opinions of our permanent staff. This occasions some delay, but the prizes will be forwarded to the winners at the earliest possible moment, and the result will be announced next month.

Competition No. 6.—Views in Ireland. Notwithstanding the large number of entries, the quality of the work submitted was far from high. In several instances competitors submitted one good print with others of a much lower standard, but in no case was there a complete set of three prints of equally good quality fit for use in *The Photogram*. Under these circumstances, exercising our privilege contained in Rule No. 9, we are reluctantly compelled to withhold the prizes and certificates. We, therefore, have a balance of one guinea and a half, which we propose to offer in prizes for any special competition suggested by our readers. Please send suggestions before April 15th. Several competitors included one really good subject, but in no case was there a good complete set. The best work came from "Pat," A. T. Crane, Ernest L. Fletcher, and Willie Fletcher. These all show good promise, and we hope to see more work from them in the future. All prints have been returned to the senders.

SOCIETIES' PRIZES.

Present Scoring—	Society.	Points
	Edinburgh Photographic Society	1½
	(Won by Miss Christian H. Curle.)	
	Leeds Camera Club	½
	(Won by Morris May.)	

Competition No. 7.—We offer prizes of £1 is. for the best, and 10s. 6d. for the second best set of three photograms (landscape, seascape, or architectural, with or without figures), taken in the district of Shrewsbury. The last date for receiving competing prints is March 31.

Summer Competitions.—Similar prizes are offered for similar photograms in other districts of Britain, as follows:—

No. 8.—Views of Scotland (within 50 miles of Edinburgh). Closing April 30, 1896.

No. 9.—Views in Yorkshire. Closing May 31, 1896.

No. 10.—Views in Warwickshire. Closing June 30, 1896.

No. 11.—Views in London (within seven miles of G.P.O.). Closing July 30, 1896.

The photograms must all be of subjects accessible to the public, and preference will be given (all other things being equal) to subjects having some historical or literary interest.



Rewards of Merit.—Burroughs, Wellcome and Co., the well-known makers of developing "tabloids" have been awarded three gold medals for excellence at the Atlanta (Georgia) Exhibition.

Colonel Waterhouse has been awarded the enamelled gold medal of the Photographic Society of Vienna for his researches in scientific photography. This popular officer has long been associated with photography and has originated several important advances.



A photographic exhibition, open for four months, is being arranged by the Glasgow Corporation.

"Invention" is amongst the journals that use the word "photogram" as an alternative for "photograph."

Beverley.—The third exhibition of the Beverley Photographic Society will be held in the Assembly Rooms on Easter Monday, April 6th. Particulars from T. J. Morley, Toll Gavel, Beverley.

Durham.—The fourth annual exhibition of photograms, held by the Durham City Camera Club, was a thorough success. The members of this club consistently use the noun "photogram."

The Cinematographe of A. and L. Lumiere has been on show in London during the past few weeks. Birt Acres has arranged to show his own instrument at a small hall close to Piccadilly Circus, but, up to the time of writing, the exhibition has not been commenced.

Cardiff.—An international photographic exhibition, under the management of the Cardiff Photographic Society, will be held in conjunction with the Industrial Exhibition early in May. It will remain open for about six months, and promises to be a big thing. Particulars from the Hon. Sec., T. H. Faulkes, 127 Bute Road, Cardiff.

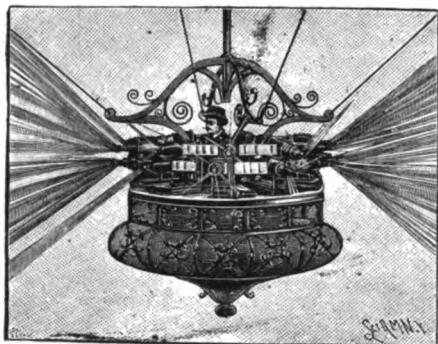
William H. Harrison, a thoroughly good photographer and investigator, an excellent journalist, and pleasant companion who never grudged giving all the help he could to anyone who needed it, is now in very sad need of help. Brain paralysis has rendered it impossible for him to continue earning his living as a scientific writer, and a collection for his benefit is being made by F. H. Varley, 82 Newington Green Road, London, N. Our readers will remember that for some years Mr. Harrison was editor of *The Photographic News*.

Further Note on Reducing.—The spirit method, as described in the February issue, is capable of being used to reduce very minute portions of a negative, such, for example, as a high light in a face, and in this case it is much to be preferred to scraping with a knife. Instead of using leather or cotton-wool, as recommended for larger surfaces, take a small piece of wood, say a safety match, and sharpen to a point. This point must be "burred" (which can be effected by slightly chewing the end), otherwise it would scratch. It is then dipped into the spirit, and rubbed on the small patch of density, until it is sufficiently reduced.—A.T.N.

F. W. Edwards, the President of the South London Photographic Society, has taken the management of the Copying Studio for W. H.

Ward and Co. Mr. Edwards is well known as one of our best technical photographers, both as a negative maker and a printer in platinotype. His wonderful reproductions of Tinworth's terra cottas are well known, and his studies of flowers are such as have seldom been equalled. In interior photography, too, Mr. Edwards is amongst our leaders, and he can hardly fail to prove a great acquisition of strength to the firm mentioned. His time will be devoted to the photographing of objects for reproduction by the half-tone process, and as a good deal of the firm's business consists of reproducing paintings, his experience as an orthochromatic worker will be valuable. As photographers and process workers draw together, this "way out" of "darkest photography" will, no doubt, be more general.

The Stereopticon Cyclorama.—The Chase cyclorama, described in *The Photogram* last April (p. 91), is now in a fair way of becoming an accomplished fact upon a large scale. A further description is given in *The Scientific American*, from which we have produced a block showing the method of suspending the electric lanterns



and their operator in the centre of the building. Eight double lanterns are employed and the eight positives used to project a circular picture 300 feet in circumference by 30 feet in height, are together about seven feet long by eight inches high. It is proposed to make use of the kinematograph in connection with the apparatus, in order to properly depict moving processions and street life.

The Old Light can be used for photographing or seeing through the hand, or even through the body, as was stated by Sir Benjamin Richardson, at the British Association meeting in 1868. It has the extra advantage of showing the principal viscera, as well as the bones. To see through even a thin young human body it is necessary to have the subject in a close-fitting aperture that blocks out all light except that passing through the subject, to have a very powerful light, and to place the observer in a perfectly darkened room. With the cumulative power of photography a less intense light would suffice; but, of course, the heart, lungs and other parts that moved much during exposure, would not be sharp.

The Third International Photographic Exhibition of the Photo Club of Paris, will be held in Paris, at the gallery of the Champ-Elysées, 72 Avenue des Champ-Elysées. It will be open from March 12th to Sunday, May 31st, inclusive, from 10 a.m. to 6 p.m. The aim of the exhibition is essentially artistic. Requests for admission should be sent before March 20th, 1896, to the general secretary of the Photo Club, Paul Bourgeois, No. 40 Rue des Mathurins, Paris. There will be no rewards.

The Societe Photographique de la Gironde has taken a new departure, which may or may not commend itself to our local photographic societies. With the object of saving time and preventing the disappointment of tourists, a list of the principal objects of interest in Bordeaux will be published, together with a note of the best hour and season for photographing them, and the most convenient spots for erecting the camera. A guide of this sort will certainly prove valuable on occasions, but it savours rather of the "you press the button and we do the rest" fraternity.

Variation in Toning.—*Le Photo-Journal*, in a lengthy note on "The Variation of Tint of the Metallic Silver Deposit," abstracted from *Le Journal Russe*, gives some interesting summaries of the variations of color produced in the deposit of metallic silver by the addition of various substances to the toning or developing baths. M. de Saint-Victor found as long ago as 1851 that the action of different chlorides on sensitised paper is as follows:—

Chloride of strontium gives	..	red.
" potassium "	..	orange.
" uranium "	..	yellow.
" copper or nickel gives		green.

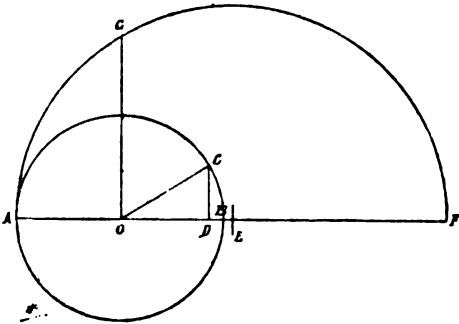
Chloride papers vary with different developers as follows, after fixing:—

Gallic acid gives a	..	green tone,
Pyrogallol acid gives an		olive brown tone.
Paramido-phenol "		olive to violet tone.
Hydroquinine or tannin,		red brown tone.

Platinum in Alaska.—The value of platinum ranges from 35s. to 45s. per ounce, according to the state of the market; yet, until recent years, miners seem to have paid little attention to its discovery. For years it has been known that platinum exists in Alaska where it is nearly always associated with free gold in placer deposits. The gold miners working in the Yukon basin for the last two years did not know the value of the little globular deposits of platinum which were so often present with their gold, hence they found them a continual source of grumbling. At the present day, the United States alone import about 3,000 pounds of platinum a year, from Russia. If the platinum deposits in the Yukon Valley, in Alaska, approach anywhere near the expectations of the prospectors, there is every reason to believe they will prove quite as valuable as the gold mines in that extensive region.

Squaring the Circle.—A German engineering journal gives the following simple construction

for determining the approximate quadrature of a given circle, and for finding the length of a circumference when developed or stretched out into a straight line; the latter will be found useful in problems connected with lenses and stops.



At the centre of the given circle A B (see fig.) raise a perpendicular O G. Then draw from O a line making 30° with the diameter A B. From the point C, where it cuts the circumference, drop a perpendicular to meet A B in D. From A set off a length A E such that

$$A E = A B + \frac{D B}{2}$$

with E as centre draw the semi-circle A G F.

Then O F is equal to the development of the semi-circumference of the given circle A B; and O G is the side of the square whose surface is equal to that of the circle A B.

Toning with Iron and Copper.—The *Photo-Gazette* gives a translation from *Luz y Sombra* of an article on this subject. With iron a blue image is produced, but with copper very fine reds are said to be obtained. The processes are strongly recommended for positives on glass. Positives on paper, of a satisfactory color, can only be secured with salted paper or gelatino-bromide paper, a greyish red being obtained, which is said to be effective for some subjects. Albumenised paper gives very inferior results.

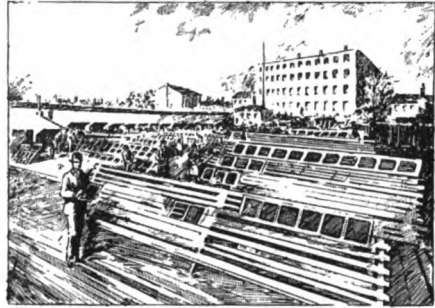
To secure blue tones the print is washed carefully and plunged into the following bath:—

Ferric oxalate	1 gr.
Ferricyanide of potassium ..	1 gr.
Water	4 oz.

By stopping the action before it is complete, deeper and richer blues are produced. The tint is much more pleasing than the intense blues given by ordinary ferricyanide papers.

By toning the blue image with a copper salt dissolved in ammonium carbonate, beautiful violet tones are produced. The copper solution is prepared by making a one per cent. solution of sulphate of copper, and adding a solution of ammonium carbonate until the precipitate first formed re-dissolves. The print can be toned with red from the commencement by placing it in the copper bath just mentioned, to which ferricyanide of potassium has been added in the proportion of $2\frac{1}{2}$ grains to the ounce. The reds obtained by this process are said to be much superior to those given by uranium salts.

Cigarette Portraits.—One of the best-known applications of pure photography to commercial purposes is the decoration of cigarette packets with portraits of music-hall favorites. This is an extensive and very specialised business, and one



that seems to continue prosperously in spite of the competition of process work and of the mechanically coated and printed bromide paper. The headquarters of the industry is New York, and we sketch from half-tones in *Luz y Sombra*, the printing yard and the toning-room. The business is, of course, conducted on factory principles. A whole sheet of paper is printed at once, the negative being made by copying from a great sheet



of cabinet originals. Each operation, as toning, fixing, drying, mounting and burnishing, has its own great room; and where possible (as in cutting the prints) power machinery is used. This one factory is said to use 7,000 reams of albumenised paper a year.

Collodio-Chloride.—A. Hoffman has given the Rouen Photographic Club the results of his experiences with collodio-chloride paper. He finds that with the combined toning and fixing bath recommended by Messrs. Lumière, the prints lacked vigor if washed before toning. If the print is washed in a weak bath of borax or common soda before it is subjected to the combined bath, the general tone is lowered, and a sepia is produced, more or less red, according to the time it has been in the combined bath. He obtained better results in some respects with the separate baths of Messrs. Liebert and Michel, but found that the prolonged toning they recommend sometimes causes the film to crack, especially near the edges. It is necessary to add the gold to this bath

(ammonia sulpho-cyanide) immediately before using it, which has its inconveniences. The author recommends the following as the best method of operating with collodio paper:—Wash rapidly in several changes (no salt), then immerse the print in a bath of 10 grammes acetate of soda and 1 gramme chloride of gold per litre. The bath acts slowly, but with great regularity, giving excellent prints, which do not lose vigor in a 10 per cent. hypo bath. Toning with borax and chloride of gold yields a brilliant sepia tone. A comparison of collodio with citrate of silver paper is in favor of the former.

Compressed Gas.—The report of the committee appointed by the Secretary of State has just been published. It is quite a bulky report, and shows that the gentlemen engaged in the work have performed their duties thoroughly. They recommend that all cylinders containing hydrogen or coal gas shall be painted red, and be provided with left-handed threads for attaching to the connections. The compressing apparatus for oxygen to be totally distinct, and unconnected with that used for hydrogen. No oil or similar lubricant is to be used for cylinder valves, pressure gauges, regulators or other fittings. Subject to a reasonable guarantee being obtained that their conditions were complied with, the committee would be prepared to recommend that cylinders should be distributed by road and rail unpacked.

The report can be obtained from Eyre and Spottiswoode.



1. "Formulaire Aide-Mémoire du Photographe." Price 3 fr., post free. Paris: Société d'Éditions Scientifiques, 4 Antoine-Dubois.

2. "Die Anwendung der Photographie zur Militarischen Lwecken." By Lieut. Kiesling. Price 3 marks. Halle, A/S: Wilhelm Knapp.

3. "Der Silberdruck und Salzpapier." By Arthur Freiherrn von Hübl. Price 3 marks. Halle, A/S: Wilhelm Knapp.

4. "The A B C of Modern Photography." London: The London Stereoscopic Co., Ltd., 106 & 108 Regent-st., W.

5. "The New Photography." By Arthur Brunel Chatwood. Price 1s., post free 1s. 2d. London: Downey & Co.

6. "La Photocollographie Simplifiée." By L. Franchant. Price 2 fr. Paris: Société d'Éditions Scientifiques.

7. "La Photographie de l'Invisible." By G. N. Niewenglowski. Price 1 franc 50 centimes. Paris: Société d'Éditions Scientifiques, Places de l'Ecole-de-Médecine, 4 Rue Antoine-Dubois.

8. "Anleitung zur Photographiren." Published by E. Liesegang, Düsseldorf. 1s.

9. "Künstlerische Photographie." By J. Raphaels. Published by E. Liesegang, Düsseldorf. Price 1s. 6d.

10. "Photochemische Studien." By R. E. Liesegang. Published by E. Liesegang, Düsseldorf. Price 1s.

11. "Die Chromo-lithographie." By Friedrich Hesse. In 10 parts. Published by Wilhelm Knapp, Halle A/S. Price 1s. 6d. per part.

A Three-color Print from nature forms the frontispiece to *Wilson's Magazine* for March.

Penrose & Co. have transferred the publication of *Process Work* to Percy Lund & Co.

An appreciative notice of C. J. Burrows' photograms of underground life has been published in *The Cornish Post and Mining News*.

A Handsome Calendar for one month is issued with the *Atelier de Photographie*. It consists of an enamelled bromide print, with the month's days printed below.

Eight Cash Prizes, including one of a hundred dollars, are offered by *The Youth's Companion*, Boston, U.S.A., for the best amateur photograms submitted before July 1, 1896.

Penrose & Co. state upon careful consultation with their printers, it is impossible to fix the publication of "The Process Year Book" earlier than the third week in April.

Radiograms, by Dr. Mackenzie Davidson, of Aberdeen, are being published by G. W. Wilson & Co., both in lantern slide and print form. Either lantern slides or whole-plate prints are sold at 1s. each, nett.

Any information regarding the whereabouts of wind and water flouring-mills will be received with thanks by R. Bennett, 19 Brunswick-street, Liverpool. Perhaps readers who have encountered such mills in their wanderings will send him some particulars.

Marcus Ward's Quarterly Magazine contains miscellaneous matter of some interest to the stationery and allied trades. It is well illustrated and has an exquisite photogravure frontispiece, but it, of course, deals principally with the wares of its publishers.

La Photocollographie Simplifiée (6) comprises eighteen pages of carefully prepared directions with formulæ, and illustration showing the stages of work from negative to print. It is clearly and simply written, and should be of great assistance to those beginning collotype.

The twenty-fourth edition of the Stereoscopic Company's "Handbook of Photography" (4), although primarily dealing with the use of goods supplied by its publishers, contains the usual amount of matter useful to beginners in photography. It is well printed and neatly bound.

G. W. Wilson & Co., of Aberdeen, are publishing lantern-slides from the shadowgram of a girl's foot, in which a piece of needle was embedded. The price is 1s. each. The shadowgram was made by Dr. Mackenzie Davidson, in order to determine the exact position of the needle, which was then removed by Dr. Gibb.

Judging from this (11), the first instalment of a new work on chromo-lithography by Herr Hesse, who has been for some years in the State Printing Works of Vienna, as the head of the chromo-lithographic department, the work will be not only the most complete ever published, but the indispensable companion to all lithographers.

The New Photography.—The cost of apparatus has been the chief stumbling-block to

would-be shadowgraphers by the Röntgen rays. Dr. Douglas Neale, of Edinburgh, has just obtained satisfactory results with an outfit which costs, including both electrical and the photographic apparatus, only just over three pounds.

An Enterprising Professional in Lanarkshire recently offered to supply artistic well-finished photograms, for decorating the whole of the carriages on the railway serving the district. No charge was to be made, on condition that the company granted a free pass while the negatives were being made. The company declined.

"The New Zealand Photographer" for December is a specially illustrated issue from a rather curious cause. Josiah Martin, the editor, kindly undertook to collect and forward representative New Zealand work for *Photograms of '95*. A great many good works arrived too late, which tempted him to reproduce as a special supplement to his paper no less than fourteen subjects.

Camera Stalking.—A. G. Wallihan has added to his already extensive list, nine 10 by 8 originals of bears. He writes, "I have been out all summer and fall, since I saw you, after big game, but have had such discouraging luck that I feel quite put out. However, I am off after mountain lion or cougar pictures for a month or two, and I trust I may have better luck so as to send you some results."

The Smithsonian Institution at Washington has forwarded a further budget of twenty-four highly interesting publications to *The Photogram* library. These include bibliographies of various Indian languages, and more interesting to British readers, reports of recent discoveries relating to the earthworks of the ancient mound-builders. To lovers of prehistoric remains these books will prove of absorbing interest.

Stalking with the Camera.—Charles Irving Rice tells, in a recent number of *Shooting and Fishing*, how he succeeded in photographing a bull moose. His interesting narrative is illustrated with a reproduction from one of his negatives, taken at a distance of less than ten feet, and no rifle within a mile. As a matter of fact, we believe the moose turned the tables on the photographer, and "stalked" him rather more closely than was pleasant.

Some of the best marine photograms we have ever seen are a set of eight, entitled "In a Storm," published in *The Town and Country Journal*, of Australia. The views were taken on board the barque "Harold," by Captain J. S. Henry, while off Cape Horn, last September. Not only are the representations of storm most realistic, but the camera has been maintained in a level position during each exposure, which renders the views still more true to nature.

An interesting and popular description of the X-rays and their work, forms part of a new book (5), published by Downey & Co. It is profusely illustrated with blocks from *The Photogram*, and other sources, and is likely to have a good run. In addition to this paper there are others relating to color photography, psychic photography, retinal

impressions and spirit photography. We note, also, that the author has conferred the honorary degree of "Doctor" upon Mr. Ingles Rogers.

Mutual Admiration.—M. Henri Couquin, 38 Rue Monge, Paris, announces the proposed publication of an "Album of Photographic Amateurs." "Not wishing to make it a commercial affair, and desiring to base his price on the number of subscribers, the editor begs amateurs to send their approval of the publication. Each subscriber will have the right to the reproduction of one of his negatives in the album." We think the miscellaneous collection gathered together under these conditions will be decidedly *interesting*, if not particularly valuable.

A French Handbook, dealing with photography of the invisible (7), has, in twenty-three pages, gathered together a number of results from Continental and English workers with the "X" rays, the ultra-violet rays, phosphorescence, and the electric current. The illustrations are from experiments of well-known scientists, and several are from "The New Light," to which the editor kindly refers. Mr. Niewenglowski is to be congratulated on his contribution to the literature of a subject, interest in which is likely to constantly increase. The pamphlet sells at one franc fifty centimes.

A new work dealing exhaustively with the fascinating arts of "Etching, Drypoint, and Mezzotint," is announced as nearing publication. The author is Mr. Hugh Paton, Associate of the Royal Society of Painter-Etchers. The book is intended to deal with the subjects mentioned in an interesting fashion, forming a practical treatise covering, we believe, the whole ground more thoroughly than has hitherto been attempted in a single volume. The illustrations will include a series of etchings from original plates. Typographically we are promised a first-class specimen of bookmaking. On publication, further reference will probably be made in these columns.

"The Beam" is a bi-monthly magazine issued at 9d. by some of the art students at South Kensington. We gather this from internal evidence, since the first number does not give the name of a publisher. The first issue is wonderfully interesting. To us the intention of most of the work is a complete mystery. It is a class of art that is popular, but far beyond our comprehension, and we recommend all who are interested in the newest art to obtain a specimen copy. We believe it can be obtained for 10d., post free, from Mr. Alfred Jones, 28 Trafalgar-square, Chelsea, London, S.W. He seems to be the editor, but no doubt he will hand the order to the publishers.

The Art Magazines generally teem with suggestion and inspiration for photographers who can read between the lines, and this is especially so with a recent issue of *The Magazine of Art*, which is illustrated by an unusual number of subjects that may be attempted by the camera. Amongst the most interesting is a night study of Charing Cross Station, by Joseph Pennell. Photographers have not realised the artistic value and the photographability of the night side of town

life. Perhaps the finest place in the world for this work is the Thames Embankment and bridges; one of the finest views being up the river from Blackfriars Bridge, and another, the view of Charing Cross Station and hotels from Waterloo Bridge.

The Moorish Alcove, which we illustrated in our Jan. issue, reproducing a block from *Wilson's Photographic Magazine* to which we credited it, appears to have been copied by Wilson, from a supplement to "Furniture and Decoration," in which it was given, December 1st, 1893. As the writer of the article in Dr. Wilson's magazine gave no acknowledgment, we presumed we were right in crediting it to that journal, but we have much pleasure in now giving the credit where it was originally due. "Furniture and Decoration" is published by Timms & Webb, Chiswell House, Finsbury, E.C.; any photographer interested in "Artistic Fittings" will find it a perfect mine of suggestions.

Formulaire Aide-Mémoire du Photographe (1) is an octavo volume of over a hundred pages, published under the direction of Gaston-Henri Niewenglowski, by the Société d'Éditions Scientifiques of Paris. This, the second edition, is enlarged and revised, with that very good thing, an excellent index. It contains a number of exceedingly valuable reference tables, covering a wide variety of subjects, and much information which ought to materially assist photographers, as it is presented clearly and concisely. The volume is truly what it claims to be, the *vademecum* of both amateur and professional in all the many branches of the art-science of photography.

Collin Campbell's "Natural Colors."

The following are the results of the tests to which we submitted fragments of the "Natural Color" prints mentioned in our February issue:—In water the color discharges almost entirely in about five minutes. Potassium nitrate solution has practically the same effect. In acetic acid but little change takes place for some time. In a ferridcyanide reducer the silver image almost entirely disappears, and also the color, with the exception of blue, which, in all the tests, holds its color the best. In the case of a print exposed to daylight, with a part of the same print covered, the uncovered portion, after three days, showed only slight alteration, but the light was not strong, and only a portion of one day was there sunlight.

"**Photograms of '96**" is already in active preparation. We believe that the annual issue of a collection representative of the work of the best photographers is destined to have a great influence upon the progress of our art, and rely upon all who are interested in that progress to co-operate with us. As time is the most important factor in our work, we hope to receive advance proofs of some of the leading pictures of the year, so that they may be reproduced at leisure and printed with care, before the opening of the great exhibitions. A circular, giving some particulars of our arrangements for early reception of work will be sent to the exhibitors at the principal shows.

Any friends who do not receive this, and who are likely to have pictures to place at our disposal, will oblige by dropping us a post-card.]

From Ed. Lièsegang's publishing house we have received three books which will be valuable additions to photographic literature. Raphael's work on "Artistic Photography" (9) is one of those brightly written treatises on art in connection with photography with which we are unfortunately not so familiar as we should be in England. The subject is treated from the photographer's point of view, and is therefore all the more valuable, and a decided contrast to the vain vapouring and "Seitfüllenden Ballast" of the usual writers on art. Dr. R. Ed. Lièsegang has for some time ranked as one of the highest authorities on photographic chemistry, and this second part of his treatises on photo-chemical studies (10) will add to his name and to our knowledge. For beginners the little work, "Anleitung zum Photographiren" (8), will be found useful; it is simply written in plain language, and deals practically with all processes.

Mr. Hollyer's "Catalogue of Platinotype Reproductions of Pictures, &c.," should be obtained by all art-lovers, and should well repay them for the shilling it costs. Its seventy-eight miniature half-tones are a good index to the finest work of Burne-Jones, G. F. Watts, Holbein, Rosetti, and many other ancient and modern masters. Though in many cases very small, they are quite sufficient to give many useful lessons in figure composition, apart from their use in leading to the acquisition of the beautiful platinotype copies that they represent. It seems curious that the work of the painter should be brought to the masses, firstly by photography, and secondly by a further photographic process. Other publishers of catalogues might well copy the quality of this list. The printing, the comments (by Horace Townsend), and the blocks (by Hare & Co., Ltd.), are all worthy of the work they aim to represent. Finally, the address of Mr. Hollyer is 9 Pembroke-square, London, W.

Photograms by the mile.—Now that the automatic exposing, developing and fixing machine, seems likely to be experimented with on a considerable scale, and automatic photographic prints are to be presented to the public as a novelty, we may go back thirty-five years to the machine of Fontayne, which was described by Mr. G. H. Babcock in a paper read before the American Photographical Society, August 13th, 1860. Mr. Babcock exhibited prints made from one negative at the rate of 12,000 an hour. Sunlight was used, as the day of popularly available electric light had not then come, and when the exposures were at the rate of 2,500 an hour a condenser was not required; but to produce 12,000 an hour a 7 in. condenser reduced the circle of illumination from 7 in. to 1½ in. in diameter. In automatic printing machines, development methods are naturally used to attain speed, and we need not remind our readers that the first important photographic printing method, that of Talbot, was a development method quite rapid enough for the rate of working above mentioned.

The following were duly mentioned in "Prints" heading last month, to which heading their numbers have reference.

Wilson's well-known "Year Book" (7) is one of the most useful published this winter and contains a goodly collection of sound articles.

"Bromide Enlarging" (9) deals with the general use of bromide papers in enlarging and contact printing. The matter is thoroughly practical, and most of it has already been before photographers for some considerable time. It is now in its tenth edition.

Another of the "Popular Photographic Series" (2), consists chiefly of personal reminiscences of the author, and description of how certain compositions were taken. The descriptive matter is mostly superfluous, as the means employed are painfully apparent in most of the illustrations, as in "The Picnic" for instance. The only illustrations worth more than a passing glance are "Pillow Fight," "Living Pictures," and "Oh, what fun!" These are undoubtedly good.

A little volume of seventeen pages (6) has reached us from Brussels. It is a critique on the recent exhibition in that city, is well printed on rough-edged Holland paper, with several apt quotations referring to art on the cover, and daintily bound. The number of exhibitors was small, therefore there are comparatively few pictures to notice, but they were selected mainly from those shown at other exhibitions, and the critique is appreciatively written. As a second edition has been called for, the little volume is evidently receiving merited success.

The Art of Enlarging on paper and plates, by Dr. Stolze (3), bears unmistakably the stamp of a German writer, for the subject is treated with a thoroughness which is not found with any other nation. Every form of light is discussed, and in most cases illustrated, and then the various forms of commercial enlarging apparatus are detailed. The negative in its various kinds, the papers and developers are treated in like manner, and the book concludes with a new suggestion as to the determination of the duration of exposures which is determined by the time it takes to print from the negative on silver paper, to which, possibly, we may refer later on.

Dr. Miethe's New Book on the practice of photography (5), is a very complete, workmanlike, and handsome book. Unlike most of the handbooks of to-day, it considers the needs of the professional studio-worker even more fully than those of his amateur brother. Section I. deals fully with the action of light, the construction and use of lenses, and the various tables necessary in enlarging, &c. Section II. deals with chemistry, chemicals and chemical apparatus,—advocating, amongst other matters, the use of the hydrometer in the preparation of solutions. Section III. describes the apparatus, and has specially useful chapters on dark-rooms and studios respectively. Section IV. fully deals with dry-plate negative making and with all the printing-processes in general use. Section V. is devoted to copying and enlarging. Section VI. deals with orthochromatic work and artificial light photography; and the last section treats of the artistic side of both portrait and view work.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

J. E. Lockyer, Deptford.
The Imperial Dry Plate Co., Ltd., Cricklewood.
The "Gem" Dry Plate Co., Ltd., Willesden Green.
G. Houghton & Son, High Holborn.
Wilfred Emery, Soho.
R. Tudsbury & Sons, Edwinstowe, Newark.
A. C. Cossor, Farringdon Road.
A. Hurst & Co., Fenchurch Street.
Philip Harris & Co., Ltd., Birmingham.
F. W. Verel & Co., Glasgow.
The Albion Albumenizing Co., Glasgow.
Adams & Co., Aldersgate Street.

New Goods, &c., Advertised.

Schölzig's Papers. Otto Schölzig.
Ross' Twin Lens Camera. Ross & Co.
Lockyer's Metol and Hydro-quinone Developer. J. E. Lockyer.
£20 in Cash Prizes. The "Gem" Dry Plate Co., Ltd.
Crookes' Tubes. G. Houghton & Son.
Imperial Plates. The Imperial Dry Plate Co., Ltd.
The "Ruby" Camera. Thornton-Pickard Mfg. Co.
Enlargements. Wilfred Emery.
The Röntgen Photography. R. Tudsbury & Sons.
Vacuum Tubes. A. C. Cossor.
The "Tip Top" Cameras. O. Sichel & Co.
Radiography—Crookes' Tubes, &c. A. Hunt & Co.
Tubes, &c., for the X-rays. Philip Harris & Co., Ltd.
The "Carlton" Twin Lens Camera. The London Stereoscopic Co.
The "Cathcart" and the "Runaway" Plates. F. W. Verel & Co.
The "Aye Ready" Camera. The Albion Albumenizing Co.
"Special Notice." Penrose & Co.
"The Goldsmith's Foundry." Carl Hentschel & Co.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk (*) indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.

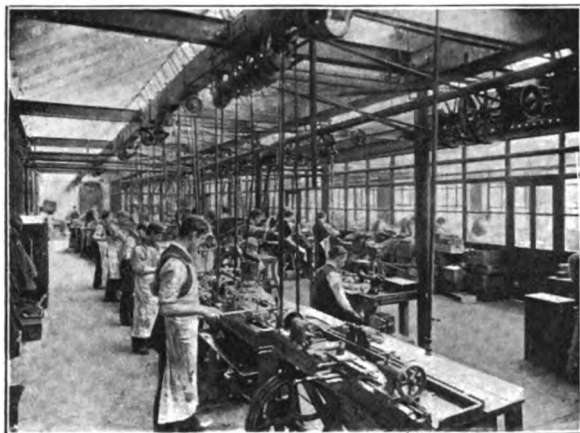
Manufacturers are requested to post us as early as possible with particulars of their new goods.

APPARATUS.

"Primus" Exposure Indicator. March 9. Price per pair, 1s. 6d.* W. Butcher & Son.

"Primus" Turntable and Universal Tripod Head.* Mar. 9. Price: brass, 7s. 6d.; electro, 9s.; aluminium, 12s.

"Primus" Duplex Tripod Point.* March 9. Price 2s. 6d., per set of three.



MATERIALS.

"Gem Dry Plates." Prices: Universal and special portrait, per doz., 1/2pl., 1s.; 3/4pl., 2s.; 1/1pl., 4s. Meteor: 1/2pl., 1s.; 3/4pl., 2s. 3d.; 1/1pl., 4s. 3d., per doz. The "Gem" Dry Plate Co., Ltd., Willesden Green, London, N.W.

"Pocket Kodak" Mounts. Price, per 100, 2s. 6d.; 1,000, 20s., in pink, cream, blue, or gray. F. E. Jones & Co., 17 Southampton-row, High Holborn, W.C.

Tissue Envelopes. Price: Cabs., 1,000, 4s. 9d.; 5,000, 22s. C.D.V.: 1,000, 3s. 6d.; 5,000, 16s. F. E. Jones & Co.

The Paget Prize Plate Co., of Watford, announce a reduction in price of their gelatino-chloride printing-out paper.

A Descriptive Lecture, accompanying a set of fifty-four slides is being published by R. H. Ramsay, of Lerwick. It is entitled: "A visit to the Shetland Isles."

Some Pretty Designs for imitation stained glass windows are given in the current number of *Glacier*, published by McCaw, Stevenson & Orr, Limited, Belfast. These will be found useful for blocking-out objectionable views from reception room windows.

Willfred Emery has given up his office at 24 South-street, Baker-street, W., and opened extensive showrooms at 3 Soho-street, two doors from Oxford-street.

Two Prize Competitions are announced by the "Gem" Dry Plate Co., Willesden Green, London, N.W. One is for amateurs, the other for professionals. In each section £10 in prizes is offered for 1/2pl. and 3/4pl. prints. Rules will be sent on receipt of stamped addressed wrapper.

"Jameson's Ride into the Transvaal" is the title of an elaborate series of sixty slides (with reading) an-

nounced as ready for sale and hire, by Walter Tyler, 48 Waterloo-road, London, S.E. The price of plain slides is 1s. each, 1s. 6d. colored. The hire of the set and reading is 4s.

Portable Studios of canvas and light framework, as well as wooden studios built in sections, and therefore extremely easy to transport and set up, are offered in great variety of designs by the Surrey Manufacturing Co., 60 Gravel-lane, Southwark. The prices run from £2 2s. for the simplest possible studio, to £23 for a wooden studio 24ft. by 12ft., and special quotations will be given for any special pattern that is required.

Photography and Process Work are daily gaining ground in catalogue illustration. A fine and expensive example of this is the book of views of the works of the Thornton-Pickard Co. This essentially model factory, designed and built entirely for the manufacture of cameras and shutters, is well worth a visit from anyone interested in orderly and economical production. For those who cannot visit the place, the album in question is almost equally satisfactory. It contains the arrangement of the whole premises on one floor, lighted from both sides and top by an unobstructed north light, and divided into sections by glass partitions. The views include, beside a general view of the works, interior views, wood-working machinery, the cabinet makers, metal-working machinery, brass finishing department, shutter fitting, examining and finishing rooms, and the general office. No note is made of the unique stock room for "parts," employees' dining-room and reading-room, or of the dark-rooms, private offices, and other smaller sections of the well arranged building. We reproduce in miniature two of the views.

"Rayburn's Photo-proof and circular mailing envelope," manufactured by H. A. Hyatt, N.E., Cor. 8th, and Locust Street, St. Louis, Mo., U.S.A., is one of the most useful novelties received this month. It is made of deep red paper, intended for sending untuned proofs by mail. Inside are impressions from two blocks; one from an untouched, and the other from a retouched print. An accompanying note points out the effect gained by retouching



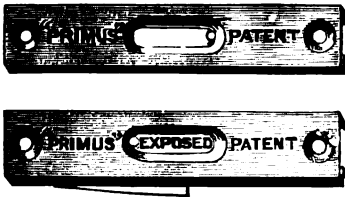
in removing facial blemishes. The idea is decidedly good. Price \$4.75 (about 19s. 6d.) per 1,000.

Our Reading-room and Museum.—Just as we are going to press the Beaufort Lamp has been fitted up in our reading-room. Visitors calling can see the lamp in work, and negatives taken with it are also on view. We would also remind our readers that we have files of all the photographic magazines of the world.

Some Really Excellent Novelties have just been introduced by W. Butcher & Son, of Blackheath, S.E. The duplex tripod toes are made of brass, and are intended to form the permanent ends of the tripod. The metal points

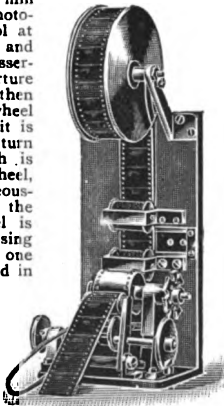


can be sheathed within rubber shoes at will, which puts a valuable power in the hands of an architectural photographer. The exposure indicator will most effectually prevent the possibility of double exposure, the mere fact of drawing the shutter causing a blank cover to fly back and reveal the word



"Exposed." The universal tripod head supplies the conveniences of a ball and socket joint with freedom from many of its disadvantages. Full particulars will be sent on application to the makers. Kindly mention *The Photogram*.

The Theatrograph is an ingenious apparatus for projecting moving figures upon a lantern screen. The apparatus is strongly constructed of steel, gun-metal, and aluminium, and of such size as to go between the condenser and objective of an ordinary lantern. The film containing the instantaneous photographs is drawn from the spool at the top of the instrument, and passes under the rollers and presser-pad in front of the oblong aperture through which the light shines, then under an aluminium sprocket-wheel to a second spool, on which it is automatically wound up. Each turn of the horizontal shaft, which is driven from a small hand-wheel, actuates a cam which instantaneously shuts off the light, and at the same time the sprocket-wheel is acted on by a steel finger, causing it to move forward the space of one picture; the film is then locked in position for projection; the shutter opens and allows the picture to be projected. In this way the film is at rest the greater part of a revolution, giving a bright image. The rapid revolution of the shaft causes successive pictures to appear without discontinuity, as in the Kinetoscope, until the whole scene has been presented. A special series of subjects is in preparation, but any Kinetoscope film, of which fifty subjects are already published, may be used. The apparatus is supplied separately or complete with lanterns, or fitted to clients' own lanterns if desired. The films or subjects are interchangeable, and supplied separately, and any number may be used with each apparatus. It may be seen in action daily at the address of the maker, Robert W. Paul, 44 Hatton Garden, London, E.C.



CATALOGUES.

ROSS & Co. are sending out supplementary catalogues of their new lenses.

ALBERT SCHULZE, of Dresden, has just published a new price list of photographic goods.

H. A. HYATT, of St. Louis, U.S.A., sends us a collection of price lists and circulars, of new goods.

ANDREW H. BAIRD, of Edinburgh, has sent us his new list of photographic chemicals, re-agents, and minerals.

MORLEY & COOPER, 70 Upper-street, London, N., has published new catalogues of new and second-hand photographic goods.

THE CRESCO-FYLMA Co.'s new price list contains descriptions and working directions of all their photographic specialties.

THE "GEM" DRY PLATE Co., LTD., Willesden Green, London, N.W., have just issued a new price list illustrated with some remarkably fine specimens of rapid shutter work. Please mention *The Photogram*.

CHARLES MENDEL, 118 Rue d'Assas, Paris, is publishing a bulky catalogue and diary for photographers' use. In addition to a full list of photographic novelties and useful formulæ, it has numerous illustrations of photography from a comical standpoint. The price is one franc.

MAWSON & SWAN's new list has particulars of all their dry plates, including the "electric," which, though fifty per cent. faster, is sold at the same price as the "Castle." A useful "exposure note book" is also sent out by the same firm to anyone enclosing a stamped addressed wrapper, and mentioning *The Photogram*.



Be Brief!—We reserve the right of condensing all correspondence, but undertake to leave the meaning intact. Personalities barred. Whenever a man is attacked by name, we wait until a proof can be sent, and the attack and reply published together.

Anonymous letters are strongly objected to, and those which are not accompanied by name and address of writer, for our own information, go into the W.F.B.

The Whispering Knights.

MR. J. J. COLE, Mayland, Sutton, Surrey, writes:—Re *The Photogram*, March, page 54, col. 1, sixth line from the bottom: "Wandering Knights" is not correct. They are the "Whispering Knights." The cap of the Cromlech having fallen off, the once upright stones have put their heads together and conspired against the king.

Psychic Photography.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—I was much interested in your "Pow-Wow" in the January issue of *The Photogram*, and glad to see you have taken up so interesting a subject, and hope to see you fearlessly follow it up; but I very much doubt if you will ever get any satisfactory results under the "conditions" you establish. Such "conditions" are an almost insurmountable barrier for the manifestation of such forces as may result in producing what you elect to call a psychogram. I can perfectly understand the attitude of those who, from the evidently fraudulent "spirit photographs" so often put forth, are disgusted with the subject, and deny that there can be any truth in the whole thing; but a really unprejudiced examination of the laws relating to such phenomena will at least convince one that, to say the least, "there must be something in it all." Of course, the flippant may say—"Oh, you can argue yourself into believing anything," which may or may not be true, but you certainly cannot reason yourself into believing anything that is not reasonable, and that is the case with this subject.

And now for the reasons why your "conditions" are such a barrier to the production of a psychogram. I will undertake to say that an important article from your pen will not be written in the hurly-burly of your business office, with the coming and going of visitors and chatter and talk there going on. You would not expect a poet to compose a sonnet in the wild uproar of the Stock Exchange; neither would you expect an artist to paint a Madonna and Child in Cheapside. To successfully do either of these things certain conditions are necessary. True, the words and letters used in your article, and in the poet's sonnet, might be used by the clerk in your office or in the Stock Exchange, and yet the distinctive quality you and the poet gave them would be missing. So, also, the artist might use colors in use by the sign painter across the way, but the "Mother and Child" will be missing.

The feature in your, the poet's, and the artist's work, was your individual quality, which, if the conditions do not suit, neither of you can produce in your work. It is just so with the man who can produce a real psychogram. If you isolate him from the conditions necessary for him to produce the results, no results will follow; and you do so isolate him when you expect him to use instruments and plates under conditions as opposing to the flow of his individual quality as those you, the poet, and the artist found intolerable. The force he uses, if he know it or not, is one finer than that which paints the ultra-violet rays that the eye fails to see, and it would be as reasonable to ask to see those rays in broad sunlight as to expect to get "spirit pictures" where the man capable of producing them is so isolated from the things he is to produce them with as your set of "conditions" would do. We all know that each of us has his own particular odor, which will attach itself to anything he constantly uses: it is by this odor that dogs can track one. Now, the force—call it by what name you will—that the man uses who makes the psychogram, is still more subtle than this odor, hence it is almost absolutely essential to the producing of psychograms for him to handle all the material used, until he has charged them with this subtle odor, so as to allow of the "spirit" manifesting itself. The handling of unfamiliar instruments, and the new surroundings and material, are to the man's "individual quality" just what the bustle and roar are to you, the poet, and the artist—antagonistic vibrations.

It is possible for some to produce these psychograms on plates in the original package, but just as you and the poet may have some particular chair or pen, or attitude, that is more conducive to the flow of your individual quality, so the psychographer may have one routine, in which his psychograms may be more successfully produced, for if he sees the "spirit" while making the sitting, he may, at the time he sees it, impress the thought picture on the plate; but it is quite possible that only when developing it, will it appear, the thought image being transferred to the plate during development, something after the manner suggested by Mr. Rogers.

The "spirit" photograph might be produced by the actual photographing of a "spook," invisible to the human eye, yet of such chemical color as would impress itself on the plate, just as will the ultra-violet rays; or it might be of no such form or color as could be photographed direct, but only by transfer to the plate by the psychographer. Now, if the above propositions are true, it will follow that Nos. 1, 2, and 3 of your "conditions" must be modified, and as such modified conditions I would suggest the following, that will allow the psychographer full scope for the play of his individual quality, and yet insure the issue against fraud.

1st.—Three or five gentlemen, of not too positive a nature, but broad-minded and unprejudiced character, be selected as a commission. The psychographer who is willing to give the test shall ascertain, as nearly as possible, what time, day, place and subject, he finds most favorable, and having found out these things the commission shall—

2nd.—Visit him for the test, examine carefully his camera, lens, slide, dark room, dishes, &c.; photo his backgrounds, and then see him load the slides from the sealed marked package of plates which have been in his keeping, but which the commission assure themselves has not been tampered with. He shall perform all the manipulations under the direct eye of the commission, and if a psychogram is produced, a re-trial shall at once be had, and any part of the manipulation agreed upon as most likely to account for the "spirits" shall be closely watched. Then some one part of the manipulation shall, on each succeeding re-trial, be performed by some one or other of the commission, in order to, if possible, find out at which stage in the manipulation the "spirit" appears—say, develop the plate as soon as the psychographer has taken it out of the package, after it is placed in the camera and the slide drawn, but before exposure—not after exposure.

Care must certainly be taken not to become suspicious at something that, at first sight, may look strange, for such

suspicious thoughts will effect this "quality" much as an angry remark would knock out your ideas, and the poet's poetry. Let the commission weigh and consider matters very carefully, and not try to come to an immediate decision.

Trusting to see this subject taken up in a truly scientific manner, and that you will have some interesting tests to relate in future issues of *The Photogram*, I am, yours truly,
M. HERBERT BRIDLE.

526 So. 2nd Street, Philadelphia,
February 5th, 1896.

Some people in Eastbourne sent a contribution to the Mendel Howard Fund under their initials. We shall be glad if they will kindly send us their full name and the initials they used in the first instance, when we will at once return their money.



Questions are answered by post when stamped envelope is enclosed for reply. Questions without stamped envelope are not answered at all.

A few of the most generally useful answers are given in this column.

Queries should be brief, but MUST give full details; and should be accompanied by samples of faults, etc.

ENLARGEMENTS.—Metol is an excellent developer for the paper you mention, or for any bromide paper. Concentrated stock solutions can be made in the following manner:—

Solution A.

Metabisulphite of potash	...	...	...	1 oz.
Metol	...	...	...	150 grains.
Water	...	...	...	10 oz.

Solution B.

Carbonate of potash	...	...	...	3 oz.
Water	...	...	...	12 oz.

For use, take 4 parts of A, 3 parts B, and from 10 to 80 parts of water.

Latterly it has been recommended to increase the quantity of sulphite of sodium in the metol developer, with the object of bringing out more detail, and thus avoiding a tendency to fog, as would be the case when increasing the quantity of carbonate of potash. The simplest way of thus using the sodium sulphite is to replace solution B by a solution C, as follows:—

Solution C.

Carbonate of potash	...	...	...	3½ oz.
Sodium sulphite	...	...	...	3½ oz.
Water	...	...	...	17 oz.

For use, mix 1 part of A, 1 part of C, and from 10 to 20 parts of water.

Metol is easily restrained by bromide of potassium solution; the addition of a few drops to the developer will clear any surface fog which might become apparent.

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Radiography.

An Error.—Owing to press of work an error crept into my article of last month, viz., the weight of wire on the primary coil. The weight given is that required for one layer, and is only half the requisite quantity, viz., 4lbs. The secondary winding can also be improved by winding the central sections slightly larger than those at the ends, thus giving the coil a barrel shape. This is found to be better in large coils, as the lines of magnetic force proceeding from the iron core have an elliptical shape, the core being the major axis or longer diameter. My reason for not advising this was, that it is a little more difficult for amateur workers.

Bichromate Battery.—A few notes on cells may not be out of place. Bichromates are perhaps the best, the construction was described last month. The voltage and current required for a 6in. coil, built as the one described last month, to give good results, is about six volts and three amperes. This can be obtained from about six bichromate cells of quart size, connected zinc to carbon, or in series, as it is called. The cells run down after a short time, and can, to a certain extent, be renewed by shaking the plates; the solution is exhausted when it becomes a greenish tinge. Chromic acid and sulphuric acid can be used instead of bichromate of potash, and is perhaps better. The zincs should be taken out of the solution when the current is no longer required, as they gradually dissolve in the sulphuric acid. These cells can easily and cheaply be put together by anybody. No. 14 B.W. G should be used for connection to the primary terminals of the coil.

Re Tubes.—In respect to the tubes, which since my last article have undergone a variety of changes, it is found that they become "fatigued." The production of the X-rays decreases, and this seems to be due to the vacuum increasing by a soaking in of the residual gas into either the aluminium electrodes or the glass walls or both. The molecules of the residual gas are set in very rapid vibration, bombarding the glass and producing the phenomena of fluorescence; and the velocity may be great enough to cause the molecules to enter into the fluorescing substance. A slight chemical action also may take place, the mercury vapour left in the tube, from the mercury pump, being reduced on the surface of the tube, and tending to increase the vacuum. In using the large spark coils of the present day, the bulb should be carefully dried by means of a silk rag, as any moisture on the surface offers to the spark a comparatively easy path to the other terminal. This causes great local heating of the glass and if this is not very well annealed, fracture, when at once the air is forced in and the tube spoilt. Tubes appear liable to become temporarily fatigued, an effect as if the glass lost its resiliency after a few minutes' working. There is also a tendency to heat at various points, especially when working with a very high tension current; so that many workers find it advisable to frequently break the current, giving short exposures and short rests alternately. When the tubes have become permanently fatigued it is found they recover slightly on resting for a short

time. It is best to make part of the exposure, switch off the current for a few minutes, and then again renew the current and finish the exposure. Should they be very bad, heating slightly in an annealing oven is found to restore them, this apparently allows the occluded gas to be discharged back into the globe. The tube when in use should not be allowed to be near any metallic or other conductor, as a glow is produced near this point, thus concentrating some of the X-rays in a useless direction. Also the wires from the coil should be kept away from the glass, or a spark may pass causing fracture.—E. A. ROBINS.

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J. Lizars is placing on the market complete outfits from £2 to £10.

Complete Outfits at exceedingly low prices are being offered by Douglas Neale, 10 Rutland-square, Edinburgh, whose results we mentioned in our last issue.

A. A. Campbell Swinton informs us that he is going to arrange a special laboratory for the purpose of the medical application of the Röntgen photography. The laboratory will be at his address, 66 Victoria Street, London, S.W., and is expected to be opened early next week.

Dr. Hall-Edwards has been exceedingly busy in Birmingham with surgical work, and we hear a rumor that he has been induced by the great number of demands upon his time to take up radiography as a profession. It must prove a great advantage to the ordinary surgeon to have at his disposal at any moment the services of an expert.

A Complete Outfit, which has given very excellent results, has been placed on the market by George Houghton and Son. It consists of a bichromate battery of six cells, 4in. spark coil, and a large tube. This particular pattern of tube we have had in use and find it give excellent results with exposures of five to ten minutes. It has also the enormous advantage of durability. It seems to work, not only for a long time at a stretch, but also to have a long total life without the danger of breakage.

Radiography.—The name "shadowgraphy," which occurred to ourselves as being suitable, and which we used in our special issue, "The New Light," has been generally taken up by the public and the press. Another title, however, suggested by Dr. Hill-Norris, appears to us so much superior that we have adopted it, and we think it is likely to be generally adopted by scientific workers. It is the one which we head these columns, and we propose to call prints made by radiography "radiograms."

The High Price of Crookes' tubes is a matter of wonder to many radiographers. If they knew more of the difficulties of making and

exhausting, and the time which some of the glass blowers have spent in designing and making patterns that have failed in action, they would hardly wonder. A. C. Cossor, of whose work we have seen a good deal, must have made scores, possibly hundreds of different patterns of tubes, to the suggestions of various workers. Many of them break down from some unexpected fault in design, and the result of the whole of the labor is wasted.

Desultory work in plenty has been done during the past month, and it seems high time that experimenters should cease making skeleton hands and settle down to careful investigation. In our own laboratory we have taken up, with the assistance of E. A. Robins, a complete series of investigations with a view of obtaining a plate which shall very considerably reduce the length of exposure necessary. We have also, with the help of A. C. Cossor and his foreman, Mr. Hilliar, done considerable work in the direction of improving the form of tube used for the purpose. In both directions we expect to give our results to the photographic public before these pages reach our readers.

Douglas Neale's Tube.—The diagram (fig. 2) gives the outline of a tube designed by Douglas Neale, of Edinburgh, and called by him a low-pressure tube. One of our correspondents who has seen a demonstration with it says that with a 5,000 volt current, the supply being an eight-cell battery, good skeleton hands are radiographed in fifteen minutes. The coil to give the voltage mentioned is very cheap, as compared with the coils required for high pressure work. The tube has one cathode electrode in the centre of one side, with an anode on each side of it, and the fluorescence appears in two patches opposite the depressions, between the anodes and cathode. Such a tube is exceedingly durable.

A Crookes' Tube of wonderful penetrative power, giving good shadow hands with the sharpest possible definition with an exposure of one minute, has been worked out in the laboratory in King's College, and was shown at the meeting of the Society of Arts, on March 4th. The main points of the pattern are that the cathode terminates in a convex aluminium disc, so that the cathode rays are focussed to a point on the anode, which terminates in a flat platinum plate placed at an angle with the axes of the electrodes. From the point on the platinum plate where the cathode rays are focussed the strongest discharge appears to proceed. It forms a comparatively small patch of strong fluorescence on the side of the tube, though there is more or less fluorescence of almost the whole surface.

The New Photography.—Further advances. Dr. Macintyre, of Glasgow, writes us as follows:—"I have photographed through the body and obtained a picture of the spine and ribs in an adult. My exposures are now very much less and the apparatus simpler. I have also photographed the upper arm, the femur with all the joints and parts lower down. I have found my new cryptoscope of value in judging of the relationship and the proper distances of the Crookes' tube from the photographic plate.

With this new instrument I have been able to see through the hand and foot, and the bones in the latter case were quite distinctly seen through the boots. By this means you see we will ultimately be able to do away with photography in surgery unless for permanent records."

On the 13th ult., Professor Puluj, of the Imperial Technical High School, at Prague, sent an important paper to the Imperial Academy of Sciences at Vienna upon "The formation of Röntgen rays and their photographic action," and he has forwarded to us an abstract of the same. Fifteen years ago, he designed a tube which, besides the ordinary electrodes, contained a mica screen coated with calcium sulphide, from which proceeds not only the visible phosphorescent rays but the new X-rays with such intensity that very distinct images of small objects can be obtained in two seconds. This tube (fig. 1) was described in the *Berichte der K. Akad. d. Wissen.*, Wien, 1881, and in *Physical Memoirs of Physical Society*, London, 1889, vol. 1, part 2, p. 294, and can be obtained from J. Kettner, Hussgasse 5,

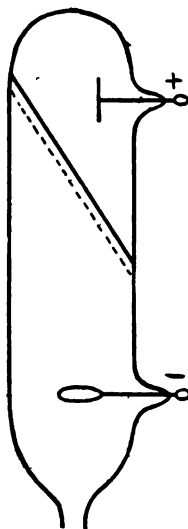


FIG. 1.

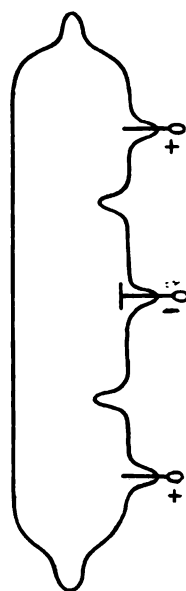
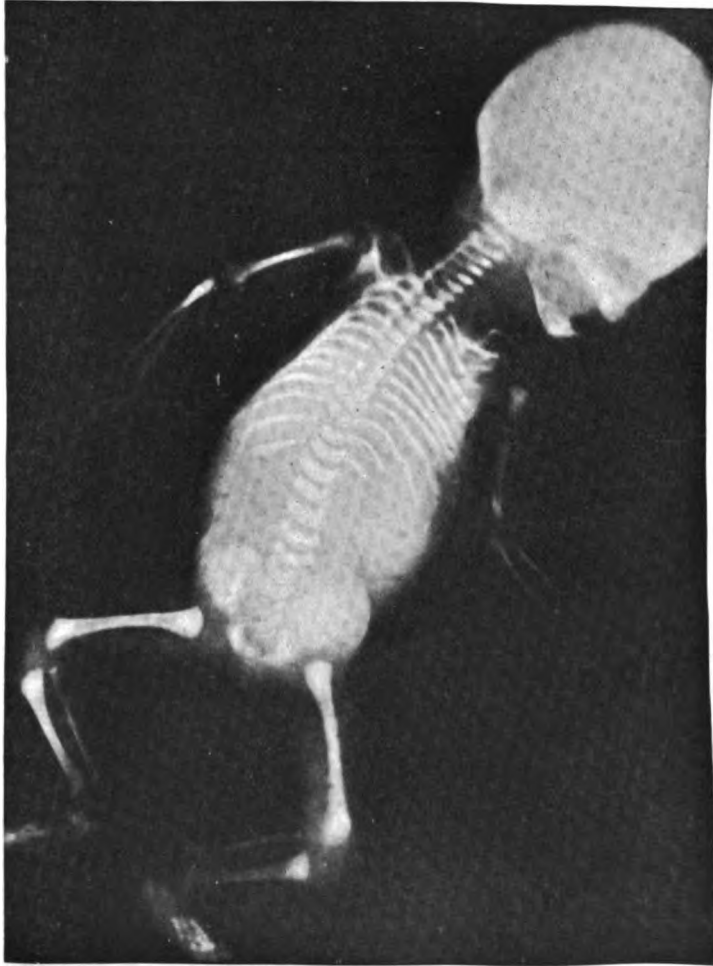


FIG. 2.

Prague. Professor Puluj states as a result of his experiments that all substances which phosphoresce in the cathode rays possess a powerful emissive power for the new rays, and that the material particles of gas or metal proceeding from the cathode are charged with negative static electricity, and when falling on the glass or any other substance not only produce molecular movements but also ether waves, and that the glass or screen affected by the cathode rays is in lively molecular movement, which is evident as heat, but also this point is the point of emission of ether waves, which, according to their vibration period and duration, are propagated either as visible rays (phosphorescence) or as invisible rays, the latter being the new rays discovered by



HUMAN SKELETON.

Radiographed by Professor Puluj.

Röntgen. The vibrations of these rays may be ascribed to longitudinal and not transverse ether vibrations as assumed by Röntgen and others, but, according to Professor Puluj, there is not sufficient ground for this assumption. In Professor Puluj's original paper, "Radiant Electrode Matter and the so called fourth state" (Physical Society's Reports, 1889, vol. 1, part 2), will be found his views upon the formation of the cathode rays. Our illustration is a reproduction of a seven months human foetus, kindly supplied by Professor Dr. Puluj, and is the first complete human skeleton ever radiographed. Dr. Puluj is sending some more of his results to the Physical Society, London.

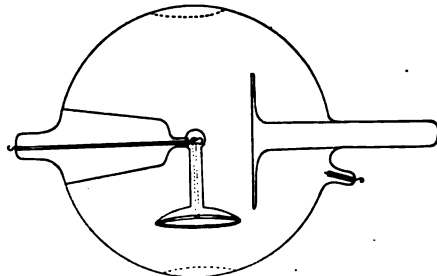
Photographing his Brain.—The latest reports from America fully confirm the statements regarding the successful experiments of Dr. Carleton Simon. While everybody else was repeating Röntgen's experiments with the X-rays, Dr. Simon was quietly completing a series of experiments (extending over three years), having photography of the brain as their object. For this work he does not use the X-rays, but uses



the ordinary electric spark in conjunction with sound waves. To use Dr. Simon's own words, as published in a New York contemporary, "The rays I use, in conjunction with sound, are electric rays—so far as the light is concerned. I produce the effect by attraction of the light and propulsion through the brain substance. At the time of photographing, the whole internal chamber of the brain is lighted up." By a special arrangement of mirrors, the doctor was able to see the actual working of his brain, in addition to photographing it. The light is thrown upon one side of the head, while the attractive force is at the other. The electric flash passes around the head, beneath the skin; if the flash is drawn through the brain, paralysis is the result.

Improved Vacuum Tube.—The sketch represents the section of an improved pattern tube, worked out by our own staff, with the assistance

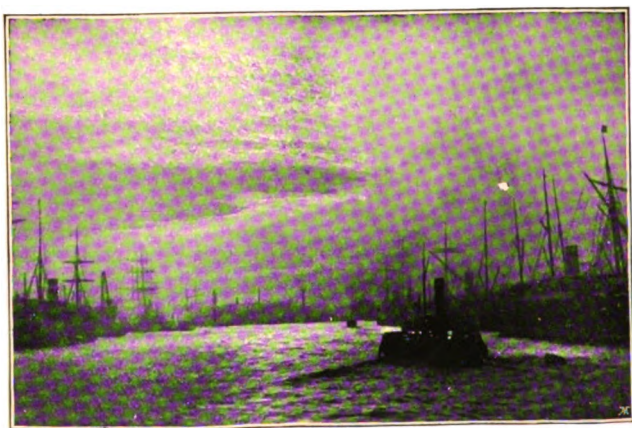
of A. C. Cossor, who has spared neither time nor pains on vacuum tube experiments. It is designed to prevent the "fatigue" of the glass by constantly presenting a fresh surface to the cathode rays, and to prevent early exhaustion of the tube by the occlusion of the residual gases. These objects are attained by making the tube rotatory on an axis, and allowing one or both of the electrodes to hang freely; and by protecting the back of the cathode electrode with any substance (say lead glass) that does not allow the cathode rays to pass through. Thus, the only part of the residual gas that is played upon is that between the face of the cathode and the tube below it. The rest of the space forms a reservoir. We provide a considerable insulating packing for the cathode leading-in wire, as recommended by Tesla. As the tube rotates and presents constantly changing surface to the cathode rays, there is no fear of heating, and the strong activity of the early moments of fluorescence is continued, while the effect is always in one direction, and as the cathode is concave, the fluorescing patch is small and gives sharp shadows. The dotted curves at top and bottom of tube represent an equatorial belt, convex to the interior of the tube, which has the effect of focussing the X-rays, so



that by placing the tube at the distance of the radius of this curve from an object the rays will all be focussed on a narrow line, and by making the distance greater, any desired surface can be covered by the rays. With bulbs blown from glass tube it seems impossible to produce this shape strong enough to stand the air-pressure when exhausted, but with moulded bulbs we think it will be possible. The space between the dotted curve and the circle can be made solid, for, as the X-rays appear to be generated at the surface of the glass, and as glass does not refract them, they would suffer no loss in passing through this belt of glass. As we wish our own laboratory to obtain full credit for any value its work may possess, we have applied for letters patent upon this form of tube: but our rights will not stand in the way of any firm or investigator working in the general interest of the subject.

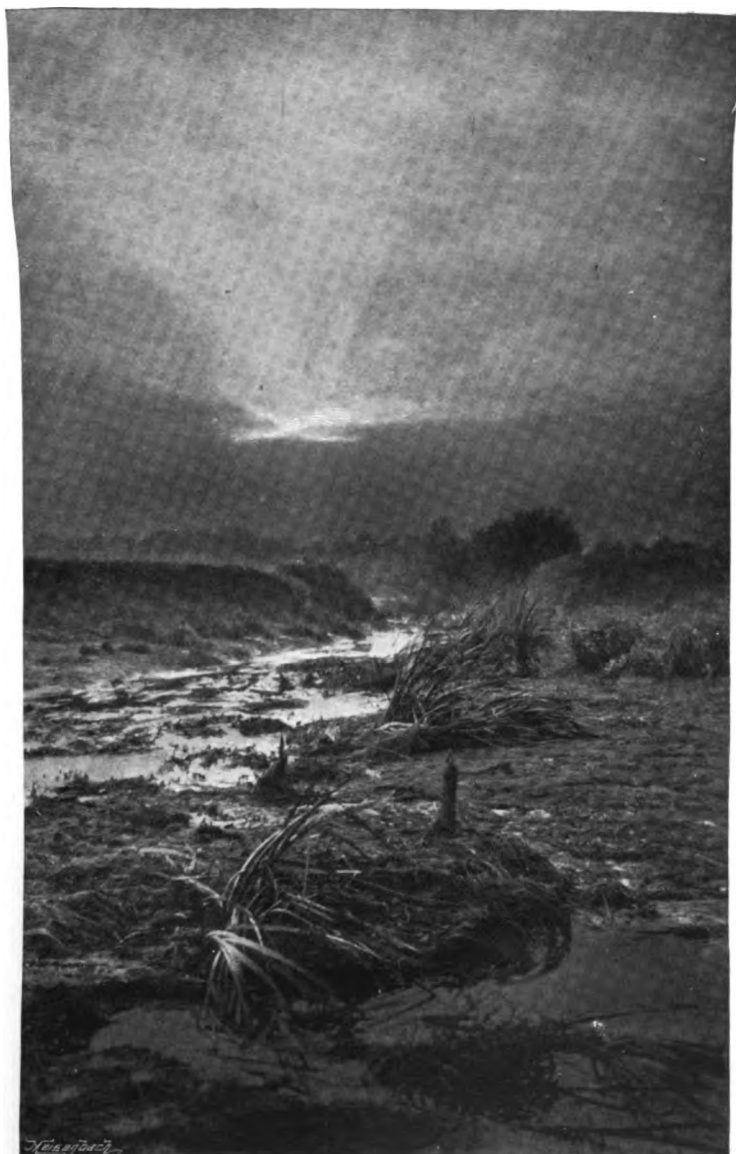
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Employment Bureau.—Our employment bureau continues to be a useful medium between employers and assistants in all branches of work dealing with photography. If you are in need of help—either male or female—or if you want a situation worth having, you should place your name upon our register.



SUNSET ON THE CLYDE.

By F. P. CEMBRANO.



DAY'S AWAKENING
BY A. HORSLEY HINTON.

THE PHOTOGRAM

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Two More "Gems of '95."

BY FRANK M. SUTCLIFFE.

IF there is one thing more than another which distinguishes the work of the accomplished photographer from that of the beginner, it is the absence of any sign of hesitation, or uncertainty about the finished picture; in figure subjects, especially, it is most important that none of the weariness of the operator is reflected in his work. When the model seems to be saying, "I shan't be able to stand here any longer if you are not quick," something is wrong. Perhaps a want of harmony between model and photographer, generally a want of promptness on the part of the photographer. The oft quoted words, "If 'twere well done, 'twere done quickly," should ever be ringing in the photographer's ears, or carved on the top of his camera to remind him that when the dark slide is drawn action and not hesitation is the word; he who hesitates loses that charm of freshness which is so apparent in all really good work. Even in landscape the worker should learn to reserve his force rather than waste it, and to cultivate the powers of seeing and precision, rather than the habit of firing off a plate at everything, with the hope that some may turn out well. The most important faculty the photographer can develop is that of being able to seize the opportunity at the right moment, for successful photography, unlike painting which requires work continuously, means constant watchfulness and acting with determination at the right moment.

On page 72 of "Photograms of '95" is an excellent example, which shows what *can* be done by striking when the iron is hot. This picture preaches three sermons to the student, it shows him the necessity for the precision we have spoken of, it shows, too, that the simpler the subject the more pleasing is the result, and it further points out that it is by pure photography and not by artifice that we can hope to get works of art by the aid of the camera.

How much pleasure anyone gets from the study of anything, be it photography or anything else, depends entirely on themselves, and how each one's individual taste has been cultivated. Now the fruit of the camera appeals most strongly to those who have studied the outside world around them, and who take a delight in taking in the endless pictures which Nature provides at every turn: in fact, those who intuitively or by teaching can "see." Photography has taught thousands who were comparatively blind before they handled a camera to "notice things." We all know, or have

been told, how proud our mothers were when we first began to take notice, but our education in this line has in too many cases been sadly checked by the supposed necessity for an education of another kind, which made such a big hole into our lives when we should have liked to have had our education in our own hands, and been at liberty to roam about the world instead of stewing over our Latin grammar in a stuffy schoolroom with ribbed-glass windows. If we were going to build a schoolroom we would have it on a hill-top and have clear plate-glass windows all round, and have all the desks near the windows so that the boys could look at the rocks, and the clouds, and the trees, and the sheep, and the cattle, and everything there is to see. But what has all this to do with photography? Oh, yes; we forgot, where were we? You were saying that photograms appealed most to people who studied the world around them; yes, and the schoolroom windows shut the world out. We remember, the more anyone uses their eyes out-of-doors, the more they will be able to see, as there are many ways of setting traps to catch sparrows, there are many ways of setting traps to catch sun-pictures. Sometimes the trappist has to walk up-hill and down-dale, at others he has to take his stand and wait. Who does not know the pleasure (though we have heard some photographers grumble fearfully because they could not push the clouds along with a stick as they their studio blinds) of waiting for a fresh turn of Nature's kaleidoscope. Such pleasure must have been Mr. Cembrano's when he saw the sun sinking through the clouds on the big, beautiful, and treacly Glasgow river, but something was wanting before that sunset glow, echoed even as it was in the water below and colored as we can only faultily imagine, would make a complete picture, that something suddenly appeared, and while fifty photographers would have gazed with admiration and "thought," Mr. Cembrano not only saw and thought, but acted, and has gained a complete success. Complete—yes, what more does anyone want? The photographer's flag is not red, white and blue, it is grey, white and black, plenty of the first-named and less of the other two. This picture is only a few square inches in size, yet when we look at it we forget its minuteness and seem to be looking out on miles and miles of space. This feeling of distance is, no doubt, the great charm of the picture, the freedom and sense of space will appeal to most people, for we are all more or less

prisoners and have a strong objection to a shut-in view. But here, why the imagination is carried away over the sea after the sun, the very accessories of the picture, the clouds and the shipping help this feeling. Though we would *like* to go on a cloud, we *can* go on a steamer, not on the black tug-boat in the foreground, though she—or at least *he*, for nowadays the intentions of the master of the ship are more generally spoken of than the ways of the ship herself—is going in the right direction. No, this black tug is too precious where she is, and the best of photography is that she will stop there for ever, thanks to Mr. Cembrano.

As the time between sunset and sunrise is of no use to photographers, it may be taken for granted that they always get a good night's rest, and are up at daybreak in search of the early worm. If proof is required of the virtuous habits of camera men, we can point to "The Day's Awakening." Here we have a picture made in a very different way from the former. Instead of the Clyde, we have a bit of water which hardly seems to have enough energy to entitle it to the name of stream. Yet, in spite of poverty of subject, for ground like this cannot be worth more than 2d. an acre, and the Essex farms may well all be to let if this is a sample of the land, the photographer has made a picture, but he had his work set before the picture came out complete. No chance here of a steamboat coming along to make it complete. Even the sun itself had to be fetched, no one knows from where, or how many times Mr. Hinton got his people to call him early that he might catch a fitting sunrise; not even a cloud to cast a big shadow over the watery foreground, all too light to be suggestive of sunrise. Even this shadow had to be cast, like past events, afterwards by putting the bottom of the print into that sunshine which it was supposed to be hidden from—such is life! no, such is photography! Then what made Mr. Hinton stop in such a spot, and put up his camera legs there? Not what he saw, surely. No, he saw further than that, he saw possibilities, he knew that however bold facts may appear to the eye and to the camera, that the same light which impresses these hard facts on the plate can be made to soften them and idealise them on the print, and that, though the camera may have its own way in the morning, Mr. Hinton can have *his* way in the afternoon. Now, we are not advising every young photographer to go at once and do the same, for if he does the chances are he will make a mess of it. Drawing with a pencil of light is a more ticklish operation than drawing with pencil or brush. Mr. Hinton will, we hope, pardon us for pulling his picture to pieces for the sake of the lessons it teaches; but, if it had been made by anyone less adept at picture-making, our work would have been unnecessary, for it would have fallen to pieces by itself, and the veriest beginner in the art of comparing photograms with the world in which he lives would have noticed that it was wrong. At every photographic exhibition there are plentiful examples of attempts at picture-making by calling in artifice to the help of honest photography: when the artifice is evident to the most casual observer who can wonder that photography is sometimes held up to ridicule as a

sham and a pretence. To return to "The Day's Awakening." Let us consider what effect the upright shape of the picture has on us, and whether this shape is after all really the best for the subject. If we cover up two inches of the foreground and rather more of the sky at the top, we have about $2\frac{1}{2} \times 4$ inches left. What a change has come over the scene, insignificant objects are now important, and how much easier to study, for the eye when looking at a picture prefers to be carried, instead of having to go alone, or at least it likes to see which way to go without having to jump hither and thither. Now that the print is cut down, it does not get stuck among the reeds in front, but sails steadily up the brook towards the dark circular mass of foliage on the right, which, now the print has been made smaller, becomes far more important, and stands well contrasted by the straight line of bank top on the left. Note well how this dark mass, now no longer of the same strength as the immediate tinted foreground, by its strength makes the rest appear more delicate, and beauties which were lost before are now easily seen. Look at the graceful curve made by the four or five tufts of reeds below the dark mass, leading from the right and ending at the clump of willow to the left of the dark mass. Then the stream does not appear half so insignificant as it did before; in fact, strange as it may seem, everything appears to have been greatly enlarged by making the print smaller, it is hardly necessary to add that this is owing to the absence of the means of comparison which the expanse of foreground and sky gave before. Then, says the student, why on earth did Mr. Hinton go to the trouble of making an upright whole plate view when less than a quarter plate is so much more satisfactory? We cannot say. Perhaps he had an upright panel to fill. Now panels have an unfortunate way of generally being upright, and as upright pictures are often required to fill them it is not always possible to make our prints of that horizontal shape, which, by common consent, has been found most pleasing. The reason is, no doubt, that it is easier for the eye to travel horizontally than up and down. Thus, pictures having often been made to fill upright panels, have come to be regarded by some as particularly decorative, or it may have been Mr. Hinton's work to make the view more startling by showing it as a *slice* of Nature, though this slicing was more evident in a companion picture, "The Day's Decline." But there seems to have been something else of far more importance which decided the shape of the print. Our quarter plate, as we venture to call our covered-up piece, beautiful as it is, does not now seem to explain the title, "The Day's Awakening." For the life of us we cannot persuade ourselves that the bit of sunlight in the sky suggests anything but *sunset*, lift the covering off and you have *sunrise*, river bank, the reeds and everything have at once all become smaller, but there is no doubt the expanse of sky above is absolutely necessary to get the effect of sunrise, whether it is that we want to see the space the sun is about to travel, or we associate rising with plenty of room above, in which to stretch our arms, matters not. Then, it was, no doubt, felt that to still further accentuate the upward

spreading of the light, the foreground ought to be darkened. These things, which must have passed through the artist's mind as he made the picture, are evident on the surface, even in a replica; those who had the opportunity of seeing the original print in the Salon would most likely be able to discover other things equally, if not more fully, thought out and exemplified, and

then newspaper critics say that photographers never think at all, but stick up their machine, and chance does the rest. The two prints we have taken for examples should prove to anyone not wilfully blind that it is not chance which makes the photogram, but the power of the photographer to seize and make the most of the chances as they come.

Continental Optical Works. III.—Voigtländer & Sohn.

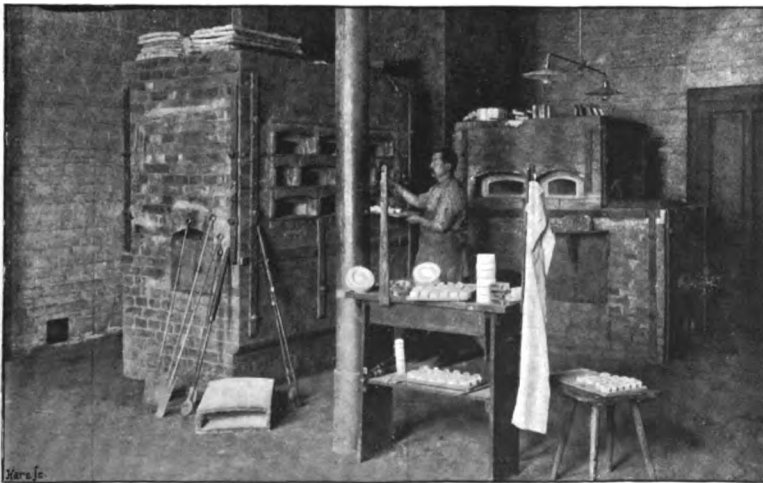
BY J. H. AGAR BAUGH.

I FOUND Brunswick a most interesting old town. Many streets of half-timbered houses, some of them with real old signboards, still remain. The cathedral is full of frescoes which are now being restored, and also contains a wooden crucifix nearly one thousand years old. I strongly recommend every photographer travelling near to spend a day or two there.

The object of my visit was to see Voigtländer and Son's works, which I found in a new part of the town—the illustration gives a very good idea of their outside appearance. Dr. Miethe, who had recently joined the scientific staff of the firm, received me kindly, and first showed me the testing studio, in which there is a magnificent camera, the ground glass being about four feet square. A focussing cloth is not used, there being a small room at the back of the camera. Lenses are tested by means of a moveable screen, and for several years an arrangement similar to that described by Dr. Rudolph has also been in use. In answer to my enquiry as to whether the firm were producing anything new, Dr. Miethe showed me the latest portrait lens working at $f/18$, also a new hand binocular telescope with

very large field of view and an arrangement for altering the magnifying power, thus with object glasses one inch in diameter the magnification ranges from four to sixteen times and the angle of view from 10° to $3^\circ 20'$. To show me the new portrait lens, it was placed on a camera in front of which Dr. Miethe kindly stood; the definition was very good, even with full aperture, but the stereoscopic effect I thought almost so marked that it will not take the place of the older series yet. The hand telescope is short, and gave splendid definition and a very bright image, much brighter than older forms. The field is flat and the achromatism also very perfect, though the price is even lower than many similar instruments now in the market.

Dr. Miethe then took me all over the works. I first saw the store of glass as received in slabs from Jena and Birmingham. The optical properties of each batch of glass are carefully measured, then the slabs are examined for flaws, striæ, etc., as much as from one-tenth to one-third of the batch being lost from this cause. The remainder is then broken into pieces approximately the same size as the lenses required.



THE LENS MOULDING FURNACES.

These pieces are then put in lens moulds as shown on the table in the illustration, the moulds are then placed in the annealing furnace, the temperature of which is gradually raised to nearly 400° Centigrade, they are then transferred to the melting furnace. Sufficient heat is used to make the glass quite soft, so that by gentle pressure



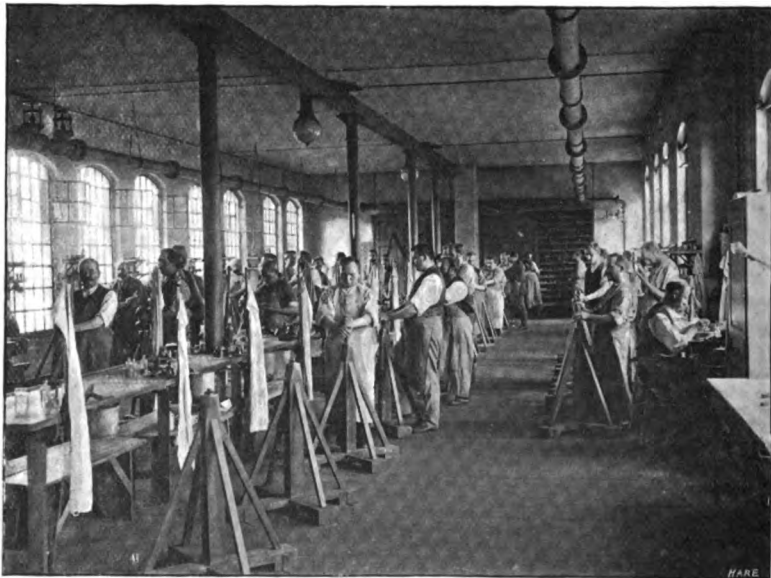
VOIGTLÄNDERS' WORKS.

the glass is moulded to the form of the lens. As soon as this is done the moulds are replaced in the annealing oven, and are left there from five to eight days to cool. The glass is then taken out of the moulds, and defective pieces put aside, and in some cases the optical constants are again ascertained. The lenses are next roughly ground to the curves and thickness they are to have, then comes the fine grinding, this operation being controlled by the copying spherometer. After being very finely ground, the lenses are polished. When several lenses are finely ground together, they are also polished together by hand on the

so-called "Bock," the progress and accuracy of the polishing being always ensured by means of proof glasses. Single surfaces and very curved ones are done by machine, proof glasses being also invariably used to secure accurate results. Most surfaces are polished on pitch, but sometimes paper and other materials are used. For polishing, English made rouge has on trial been found the best.

I saw the turning and mounting workshops, but was more interested in the tube drawing and stamping machines.

After taking me through the works, Dr. Miethe introduced me to Dr. Kaempfer, with whom I had a long and interesting conversation. He gave me further details concerning the new hand telescopes Voigtländer and Son are now placing on the market, and the calculations for which Dr. Kaempfer had made. These instruments should be interesting to photographers, not only on account of the splendid results obtained, but also because their construction involves the principle of telephotographic lenses: a negative lens being placed between the objective and the eye-piece. The latter is achromatised with as much care as an objective, and consists of four lenses each of which is achromatic. Dr. Kaempfer also explained a very easy method of ascertaining the size and value of stops on the German principle, which, I think, is undoubtedly far better and more scientifically correct than our method. A minute hole is made in a piece of metal or black opaque cardboard, the former is better, a light is then placed on one side of this close to the aperture, on the other side the lens is fixed at exactly its focal length from the aperture. A screen such as a piece of finely ground glass is then placed against the other side of the lens. The diameter of the circle of light on the latter



VOIGTLÄNDERS' WORKS. LENS POLISHING.

divided into the focal length of the lens gives the value of the stop used.

The history of Voigtländer and Son is very interesting. The firm was founded in Vienna in 1756 by Christoph Voigtländer. At first spectacles, reading-glasses, simple microscopes, and telescopes, more especially those of the Galilean form, were constructed. Friedrich, his son, at the beginning of the present century, made periscopic spectacle glasses, and in 1811, constructed the first Galilean binocular telescope. Further progress was then much hindered by the want of a larger selection of optical glass, and also the mechanical aids we now have. Not until Fraunhofer, in the first quarter of this century, showed how many kinds of homogeneous glass could be made, and how to ascertain their optical constants with scientific accuracy, was it possible to make any advance in the manufacture of optical instruments. The third head of the firm, Friedrich Voigtländer, was not slow to make use of these methods, and with a spectrometer made by himself, ascertained the data of all the optical glass then obtainable. These data he handed to the mathematician, Professor Petzval, in Vienna, asking him to calculate a photographic double objective. In 1839, Friedrich Voigtländer turned out the first photographic double objective, according to Professor Petzval's calculations. This objective made photography much more practicable. Its construction was so different from all previous optical systems, that it formed the basis of a new class of optical instruments. A few years later, the Galilean field-glasses were much improved by using the three-fold objectives and three-fold eye-pieces, thus reducing the spherical and chromatic aberration,

and increasing the magnification and flatness of field. These field glasses with "twelve lenses" had and still have a large sale. The present fourth head of the firm, Sir Friedrich von Voigtländer, constructed in 1877, the well-known euryscopes, and later, various other objectives with apertures of $f5\frac{1}{2}$ and $f7\frac{1}{2}$, also wide angle objectives of $f9$. Till 1886, the choice of optical glass was very limited. At this date Professor Abbe and Dr. Schott founded the celebrated works at Jena, and Voigtländer and Son were not slow in making use of the new kinds of glass obtainable, and, by the end of 1888, had improved all their symmetrical lenses by substituting two crown glasses very transparent to the photographic rays for the two flint glasses previously used. The single landscape and rapid wide angle lenses were entirely reconstructed. Later productions are the Collinear and $f1.8$ portrait lenses and new binocular hand telescopes with variable illumination.

The works are newly built and contain large work-rooms, all of which are lighted by the firm's own electric light plant. About 100 men are employed. Pensions on a liberal scale (*i.e.*, from half present wages and upwards) are given to employees, some of whom have been with the firm a long time; one of them now over eighty years old has been with Voigtländer and Son no less than fifty-four years. He still receives pay on the full scale, including extra for overtime, though for the last ten years he has not been at work.

Voigtländer and Son made some of the first photographic lenses, and with scientific advisers of the rank of Dr. Kaempfer and Dr. Miethe, we may expect further advances in optical instruments from them.

Constructive Criticism.

No. IX.—The Work of Miss Helena Padgett.

IN an age of mediocre respectability we cannot too often emphasise the fact that mere absence of faults is no criterion of virtue. In art, this is especially the case; in photography more than in any other expression of art. The ordinary man praises the picture that is free from blemishes, while the trained critic prefers a work that can compel his admiration in spite of its faults. Originality, definite purpose and self-confidence are qualities that should claim recognition whenever they are found in a photographic exhibition, and it appeared to us that a little work of Miss Helena Padgett, hung in the Hackney Society's last exhibition possessed these qualities in a high degree. We reproduce the work under the title of *Pollard Willows*, together with others by the same worker. They are selected from a number of examples which shew that the author has great versatility, originality, and a freedom from convention that promise to render her work specially notable when she shall have completely mastered the technique of the photographic methods. The comments that follow are by Gleeson White, and

though they refer to one or two pictures that we are not able to reproduce, the suggestions are sufficiently obvious without illustration.

It has been often alleged against the work of Rossetti and Burne-Jones, that they chose types of faces impossible and non-existent. That no one who is familiar with the methods of either artist believed this goes without saying, yet the fallacy is still frequently met with in journalistic criticisms and in the ordinary gossip of visitors to picture galleries.

If the photograms of Miss Padgett did nothing more than remove this foolish prejudice, they would be worth a word of commendation. True that the head which is here reproduced, has been worked upon by hand, and so the curious "quality" which distinguishes it is, perhaps, not entirely due to the model. Nor in praising it unreservedly is it essential to raise the whole question of re-touching. To do so would be to stray far away from Miss Padgett's admirable results, and possibly land the one who set out by admiring in

an attitude of logical and severe condemnation. For theories are kittle cattle, and may be ridden to death. Mounted on a hobby a man may easily come to grief, but to start upon an untried theory is to run a-muck among all sorts of



cherished fallacies accumulated by accidental moods and varying phases of taste. It is easy to construct theories for demolishing other people's opinions, but a theory that shall support one's own, and yet impel no giving up of wholly indefensible exceptions takes a lot of finding.

So whether as a purist you condemn *in toto* any added work whether by brush or pencil, by jets of water, or any mechanical appliance; or whether you permit any and every such addition; or even worse, agreeing in theory with the first attitude, yet allow any touching which is so well-concealed that it is not apparent to even a trained eye—whichever of these three positions find favor in your eyes, nothing here set down is intended to support or condemn either one of them.

To return to this head. Could you see it in the silver print, with its bold sweeps of water-color laid on hastily, but surely, you could not fail to be fascinated with it. It looks like a piece of some early Italian fresco torn bodily from its setting. If in the reproduction much of this charm should vanish, then one has but to insist that the original is all I claim for it, and proceed to quote the orthodox commination service against process-engravers repeated daily in most editorial offices. How the cherub's head has been managed I do not know. To the print itself nothing has been added, but it is obvious that the wings are not direct from "property" contrivances. The pretty face with its roguish twinkle and playful smile, owes, I fancy, a little to artifice, the shape of the mouth, and possibly the contour of the eyelids certainly suggest

modification, but as I say, from the bromide print it is not easy to decide what has been done. Certainly the end justifies the means.

A portrait study of a lady in a conservatory is admirably contrived, the lay lines of her robe accord with the acute perspective of the sides of the narrow gangway in which she stands, the attitude is well chosen, the lighting fairly good. Unfortunately the patch of foliage against which the face is relieved makes the hair appear too unsubstantial; nor is the glass shade at the left lower corner quite a happy note in the composition. But on the whole it is a very charming subject picture, not aggressively artificial in its composition and incident, and yet obviously no mere snap-shot but a well-ordered theme, carefully thought out beforehand.

The reading figure among poppies looks exactly like a photogram (without isochromatic plates) from a New English Art Club picture. You know that in the natural subject as in its painted presentment at the Dudley Gallery the "tones" would be all right. In whatever else they fail to harmonise, nature and impressionist art agree in the matter of tone-values. But here the values are excruciating, the silver-grey of the poppy foliage is black compared with the dress, which is in the same plane of light. As a composition the thing is delightful, but as a transcript of tones it is not pleasing. The figure silhouettes too violently against the background, and the lines of the flowing drapery are in unhappy rivalry with the pose of the pendant arm.

A girl looking across a dyke at some sheep is

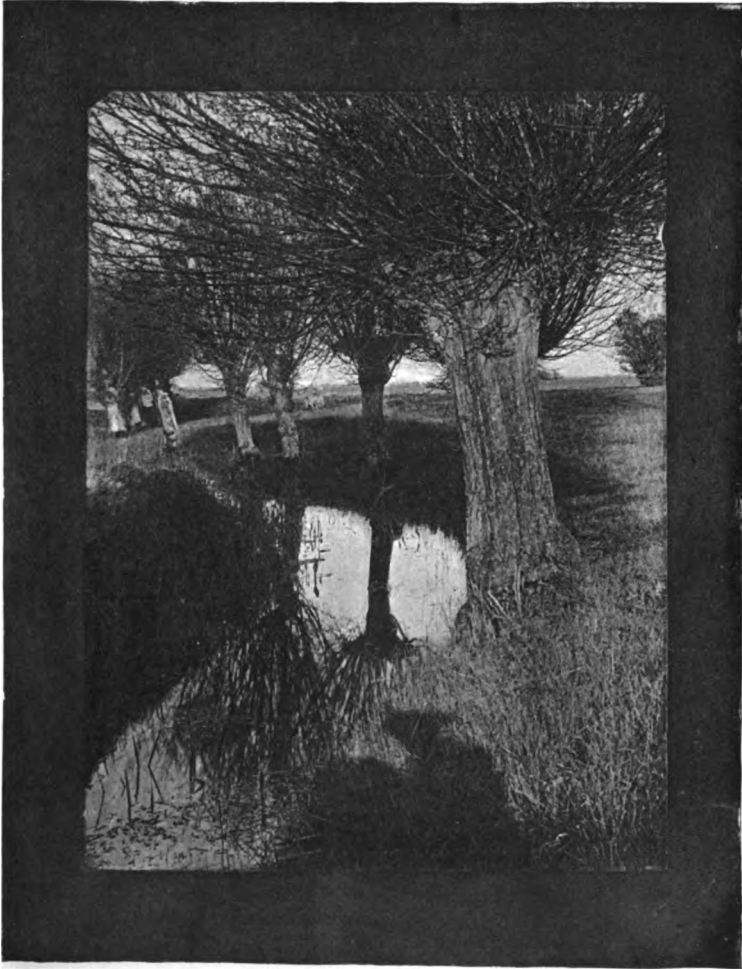


good. Fortunately it is not entitled "Mary, ca' the cattle hame," because, I believe, sheep do not respond to the voice of the charmer, quote the Kingsley never so wisely. It is a very pleasant picture, and should be seen in one of our

exhibitions. Here again the sky in water-colors raises the question, which is again sternly suppressed.

Two children in a shrubbery are both a little conscious that the eye of the camera is upon

but not masterly. Another portrait of a lady with a white kerchief quaker fashion, admirably arranged to yield a line which is in sympathy with the upturned head, is quite a happy example of a natural and graceful portrait.



POLLARD WILLOWS.

By Miss Helena Padgett.

them, nor is the grouping as happy as in Miss Padgett's other work. Yet it is by no means below a very fair average. *Elda*, another head, belongs to the school of the out-of-focus; it has its charms, what baby-face girl has not? It leaves much detail to the imagination, and is pleasant,

Two flower studies that suggest Mrs. Cadby's work are evidence that Miss Padgett is by no means confined to one subject, but attempts many phases, and succeeds more or less in all.

The little group is both individual and interesting, and full of promise.

GLEESON WHITE.

“Counterfeit” Presentments;

Or, “There’s many a true word spoken in jest.”

As an ardent disciple of amateur photography, with few opportunities and less time to devote to its pursuit, I would, in all humility, offer a few hints to those who, like myself, are caged within the four walls of a small London flat, without even the most remote chance of a top light.

Let not such an one despair, for an amount of amusement to oneself and one’s friends may be gained by a “side light” thrown upon the subject (or “object,” as the case may be), even with one’s art hampered by one’s surroundings and want of space, together with (and this is worse still) a want of funds. The absence of this latter commodity seems to be a common failing of the enthusiastic adherents of amateur sun-picturing.

For some time past I have been cribbed, cabined, and confined to a very small, but, let me add, very happy home; rendered so by one of the best sisters in the world, and one who, though handsome (you are particularly requested not to judge by the appearance in the photograms), does not hesitate to become the “object,” if necessary, of my home takings.

It is long since I have enjoyed the luxury of a garden as a studio, and even the pleasures of a back yard are now quite unknown to me. Surely these hardships would damp the ardor of many whose enthusiasm is less; but though we work under great difficulties the results are sometimes entertaining.

No longer does one have to turn to the family album of ancestors for a hearty laugh, where the



I.—“Snow Scene.”

One chair, one fender, one rug, one cardboard fox terrier, one counterpane as background, all planted and arranged upon a bed with pillows; sheets for ice and snow at discretion.



II.—“Cléopâtre, à la Tadmé.”

Empty all your boxes (toy and otherwise) of beads, one old piece of passementerie from your last year’s jacket, hang them upon your model, photograph against a white counterpane, and result as given.



III.—“Court Dress.”

Side light again. Select your model, gown her in a white jupe and bodice of a sheet, train of a lace drawing-room curtain, one long glove, one bouquet of cauliflower and bunch of ribbons, feathers and veil.



IV.—“Classical Studies, à la Grecque.”

Take a side light (thus you make a virtue of necessity), add one or two sham columns, used generally for supporting busts of bygone ancestors (if you lack these omit them, it will be almost as classical without). Take one or two sheets

to drape the model, a skin if one is to be had, one piece of oil-cloth for marble flooring, powder or flour dredge the hair, take and develop the picture, and await the result of a Sir Frederick Leighton.

counterfeit presentment is shewn to us of Aunt Mary in a moiré antique, leaning gracefully (?) on a broken column covered with a lace shawl; or Uncle Ben adorned with a very tall "tall" hat and side whiskers, looking hard at nothing; or Lily, when a girl, in her wedding dress and impossible attitude—for can we not have home-made dishes to tickle the risible faculties of our friends.

I am speaking from my own experience, which may not be shared, perhaps, with others; but feeling I may not stand quite alone, I make bold

to recommend the following recipes to other handicapped amateurs whose premises are circumscribed, whose aspirations are lofty, whose means of realisation are few, whose "sitters" are willing, and whose choice of a pathway lies out of the beaten track. The "studies" are from life, and component parts are actually as described.

Should these dishes be found palatable, may I have the honor of presenting to you other recipes?

"TALFOURD."

Old Processes Revived.

By W. E. A. DRINKWATER.

READ the following words of wisdom from an American contemporary (*Photo-American*, August, '95):—"The man who makes money in photography now-a-days, is the one who gets into the field first with a new process, or with an old one cunningly re-vamped, and he is able to keep something new before customers."

Is that an Irishism or an Americanism to call an "old process re-vamped" "something new"? Well, never mind. If it reads false there is a deal of truth in it. The thing is new to the people it is offered to. Equally true is the suggestion that there is "money in it." I suppose there is no process in photography that is more steadily making headway with the public, and money for the practitioner, at the present time, than the carbon process. It's old enough, in all conscience; thirty years is a big age in photography, and I believe it dates from 1865. But not in its present form. It has been vastly improved (I don't like the expression "cunningly re-vamped"). The present rage in some circles for matt-surface effects is simply a revival of old methods. It was practised in pre-albumen days because they knew no better, and it is practised to-day because we do know better. A clear case of the survival—or revival—of the fittest.

Seriously considered, there are one or two little things, which entail no great trial of skill on a man who knows his trade, that might as well be giving a fillip to bad trade as lying forgotten in back numbers of the photographic press.

First of all, are you working carbon? Why not? You can't make more beautiful prints by any means, nor more permanent. The only extra appliance required to work it is a hot water installation; but, if you try, it is wonderful what a lot of work you can get through with only a "common or garden" gas stove and tin kettle. And by-and-bye, when the demand for your "Special Permanent Prints" becomes so large that you *must* have a Geyser, or similar arrangement, you will find the tin kettle has earned more than enough to pay for it. My advice is—Buy your tissue ready sensitized; it will keep a fortnight with care. Don't bother with flexible support. Use finely-ground opal glass, coated with thin enamel collodion, and when stripped and mounted tastefully you should have no

difficulty in getting 50% advance in prices for them. If you can't, you had better have a fresh saleswoman in the shop or reception room. A distinctive trade name for each speciality you offer is a splendid help in pushing the goods. All commercials recognise this fact. Some firms call these prints "mezzotints," but you can suit your own fancy in such matters.

Another old device suggests itself to my memory by which time and labor (*i.e.*, money) may be saved. Anything approaching a large head, even in a cabinet size, demands a good deal of attention at the retoucher's hands. Now, if the lighting of the negative be anything like decent, try this means of procedure:—Let the retoucher confine himself to absolute necessities: the removal of skin blemishes and the softening of the very hardest lines. Make the printer do the rest. Let him interpose between the negative and the printing paper a thin piece of glass, perfectly clean and free from blemishes. When printing has proceeded to about one-third the ultimate depth, remove the intermediate glass, replace the paper *in situ* on the negative, and print up to full depth in actual contact. If you have never tried it before, you will be somewhat surprised at the result. The print is sharp and yet soft at the same time. The effect is heightened, if the print is vignettied, by tinting the whites of the vignette slightly—very slightly. You cannot do this better than by putting the print under a piece of glass, and piling up sand on the face and collar to protect them from the light while you tint the rest. The *tout ensemble* is then a sharp picture, very brilliant and telling, but beautifully soft, having somewhat the texture of an ivory miniature. In fact, a good trade name for such prints is "Ivorytypes."

Another renaissance that is worth attention is found in the stereoscope as applied to portraits. In taking a *carte* sitter you might just as easily make two *simultaneous* exposures, as the more usual plan of two consecutive ones by means of the repeating back. You still have your c.d.v. negative, but you will also have something else to show the sitter that will most assuredly tempt him to "part." Show him or her (especially her) the c.d.v. proof first, and then put into her hands the same picture in the stereoscope. "It shows up better like that, doesn't it?" And the trick is done.

You say you haven't two lenses paired. Well, get them! Nothing very expensive is really needed. Of course, if money is no object—which I presume is not the case, or you wouldn't waste your time reading this—you can go in for a pair of Zeiss or Goerz anastigmats. Grand lenses they are, too, but I plead that they are not necessary for portrait work. I have on my stereo camera a pair of R.R.'s, with no name attached. They cost, when new, 25s. the pair. For studio work I use the back combination only, wherever possible. When used thus, the full aperture is approximately $f/16$, and therefore somewhat slow, but I can get a fully exposed picture in three to four seconds on plates marked 70° H. & D. If you have a baby, you must perforce use the double combination to get advantage of the $f/8$ diaphragm, and that brings the exposure down to a short second under similar conditions.

In stereo-portraiture, shun painted backgrounds and profile accessories as you would the very d——. I mean as you would poison. The illusion of such things is entirely destroyed in the stereoscope. Rather a perfectly plain background than that. Better still, a couple of corners of the studio fitted with what I will call real backgrounds and accessories, and a few plants. Plain heads, too, are very effective. Keep your negatives soft—*decidedly* soft—or the effect will be rather glaring. For instructions how to trim and mount stereo-prints, look up a few numbers of recent photographic annuals.

The last old dodge that I am going to remind you of is probably the best paying of the lot. I refer to the form of enlargement known in the past as "Photo-Crayon." It consists of an enlarged transparency backed up with a piece of paper similar in texture to that used for crayon drawings. To make the matter clear I will describe the process as it used to be worked twenty-five years ago, when wet collodion was the limit beyond which no photographer had passed, and it is almost sad to think that twenty-five years' progress and improvement haven't shown us a process that beats wet collodion *for some purposes*. One of these processes is certainly the making of enlarged transparencies for "Photo-Crayons."

It is necessary first of all to decide on a stock size to make your enlargements; 15×12 is a good size, but a better still is $16\frac{1}{2} \times 12$, which is in exact proportion to the size of a trimmed cabinet print. Allow half an inch for framing rebate and we arrive at $17 \times 12\frac{1}{2}$ as the size of our glasses. The glass must be of decent quality and free from bubbles or scratches, because the finished picture is seen through this glass. The glass may or may not have a substratum of albumen according to your own practice when working wet plates. Sensitize in a fairly weak silver bath—28 to 30 grains per ounce—and develop with your own favorite decoction. Acid pyro used to be strongly recommended on account of the fine color of the deposit, but the exposure is greatly lengthened by its use. Just as good results can be obtained much more expeditiously with the iron developer followed by a toning bath. Development must not be carried very far; the slightest veil over the high-lights is fatal. A fair way of judging development is to stop immediately details are beginning to appear in the flesh tints.

You must not look through the plate for this purpose. Look down on to the image as if it were a paper print. Density is to be avoided at all costs. Fix in cyanide, to promote clearness, and then tone.

There is not the slightest doubt that the photo-crayons fell into desuetude because the late Mr. Saroni in promulgating the process advocated mercury toning, which naturally gave impermanent results. Strong solutions of gold or platinum are free from this defect and give fine tones, but are costly in use. My suggestion is to use the cheapest toning agent known, viz., liver of sulphur. A very weak solution is required, one per cent. being the utmost strength permissible; and the toning must be carried on until the image is blackened right through to the glass. I say "blackened" failing another word to express my meaning, but liver of sulphur hardly gives a black tone; it is more of a purple-black or even purple-brown. You can get almost any amount of density with this toning agent, but you must not be tempted into "working it up." What is wanted is a thin delicate image, which is also absolutely clear in the high-lights.

Before going further I will mention one or two points in connection with the mechanical side of the operation. Daylight is necessary for enlarging; it is also the cheapest illuminant known. Another requisite is a fairly rapid lens. The best results are undoubtedly produced by vignettes, and arrangements must be made so that this can be effected in the usual way—a hole in a piece of cardboard—kept moving. Vignetting also dispenses with the great need for marginal definition, so that we may take advantage of a quick acting portrait lens with a fairly large stop. Now as we are going to work to one fixed size, I strongly advise that the best focus having been obtained the camera be clamped to that position, and all future trouble in focussing thereby avoided. To obtain the best possible focus, put up one of your $17 \times 12\frac{1}{2}$ glasses in position for exposure. Have pasted on to it a piece of paper printed in bold type, e.g., the front page of advertisement matter from some newspaper. On this paper, rule in good black ink, or paint, a square $16\frac{1}{2} \times 12$ inches, showing the exact size of the ultimate enlargement. Instead of inserting a negative to be enlarged, put in its place a half-plate piece of ground glass having the cabinet size $5\frac{1}{2} \times 4$ ruled on it. Do your focussing from this end as if you were about to make a negative of the type to cabinet size. See that the small image of the $16\frac{1}{2} \times 12$ lines falls exactly on the $5\frac{1}{2} \times 4$ lines on the ground glass, and finish focussing with a magnifying eyepiece. Your camera is now in absolute focus for any cabinet negatives to be enlarged to your stock size. I forgot to mention before, that to avoid reversal of the enlargement the negative must be inserted in the camera with its film side away from the lens, and it follows that the temporary ground glass must occupy the same position.

To return to the varnished transparency. It only now requires to be backed with a piece of crayon paper to complete the enlargement. Papers of various tints and textures may be used. A very suitable one, however, is "Michellet," which is of a deep cream tint. The whole thing, if suitably framed at this stage, will bear a very intimate

resemblance to a crayon drawing, especially if a few lines of cross-hatching done with a Conté crayon are judiciously introduced *on the paper* so as to break up the background. This crayon work may be carried to a further degree with very gratifying results. Place the transparency in the retouching desk with the film away from you. Put the backing paper on the glass side of it, and with the guidance of the transparency as to outline (you will just be able to see it through the paper), introduce a little local coloring into the flesh tints. A penny box of child's colored crayons will fit you up for this work. A little color on the cheeks (keep it delicate, and use the stump or a piece of wash leather to soften it), and just indicate the prevailing tint of the eyes and hair. Now put the transparency and backing paper in their correct positions, and note the effect. I think you will be astonished. If it isn't all that can be desired, proceed as before and make the necessary alterations. More crayon where more color is needed, and bread crumbs to remove it where it is too pronounced. Finish up by sparingly touching the highest lights with white crayon or even Chinese white applied with a brush.

You have now a finished enlargement that has cost you in materials certainly less than a shilling, and yet is worthy of a really good frame. "Don't spoil the ship for a ha'porth o' tar"; if you put it into a cheap gaudy frame you will condemn it immediately. Let your taste have full play. An oak flat $2\frac{1}{2}$ or 3 inches, with a deep gold bevel coming down to the picture, surrounded by an enriched oak or walnut frame, would look well. But this is merely a suggestion. Each worker will have his own ideas on the subject.

These enlargements should easily command two to three guineas each, and they are worth it. As I said before, if they don't go it is not the fault of

the goods. To get a really good return from them I would suggest that you have a stock frame made, from which the back is easily removable. Have it kept in position by means of buttons instead of brads. Take one of your negatives that is in print and make an enlargement, put it into the frame and show it to the sitter. If you can't sell it the loss is very slight. Take it out again, clean it off, and use the glass and backing paper for someone else. I know some houses used to make a rule of showing a finished enlargement to *every* sitter. And they sold 30 per cent. of them, too.

In the foregoing I have only alluded to the wet plate method of making the transparency. Although it is undoubtedly the best, other processes are available, and I must bear in mind that the wet collodion process is a dead letter to an enormous number of photographers now-a-days. The best substitute, and one that runs it very close indeed, is collodion emulsion.* By this means we should escape the expense of a large quantity of silver solution, and the accompanying expense of a dipping bath. Slow gelatine plates can be used with fair results. They are more expensive—much more, and a lot more trouble, besides the inevitable tendency to stain and veil in the high-lights. Altogether, I think we shall do well to look for our process in collodion, used either wet or dry, in preference to gelatine.

About photo-ceramics I say nothing. That old subject revived is in abler hands than mine, but I think I have said enough to direct your thoughts into some channels which ought to be productive of good monetary returns without any large initial outlay. Try one or more of them. Try them all if you have assistance enough, and don't be discouraged at a failure or two.

* See "Autocrat" article, page 63.

Beauty Spots.

No. II.—The Welsh Marches.

By MARTIN J. HARDING.

THE camera-man visiting Shrewsbury will soon discover that it is not only for its cakes that this ancient and beautiful town is celebrated. As a centre for photography it presents a field of work embracing practically every class of subject, excepting only marine; the choice and variety being so great that it will be only possible, within the limits of this paper, to give a very brief outline of its chief attractions.

SHREWSBURY is particularly rich in half-timbered houses of the "magpie" order, the view looking down High-street being the most striking, whilst in the quaintly-named streets of Pride-hill, Butcher-row, Wyle-cop, Mardol, and Frankwell, many others will be found. Other interesting features will be met with in the Council House, the old School Buildings (now the Free Library), The Whitehall (a very fine old manor house), the old

Market Hall, and the Castle. One of Shrewsbury's glories is the River Severn, which winds horse-shoe shaped round the town, passing the Quarry Walks with their splendid lime-tree avenues. The river may be followed with advantage for several miles both up and down stream. Taking the latter course, a pleasant walk of $3\frac{1}{2}$ miles brings us to Haughmond Abbey (1130), with its beautiful chapter house. This makes a good afternoon's work, which may be extended to the neighboring woods and hills from which the Welsh mountains can be seen.

Lovers of church architecture will find much of great interest. A single day will hardly suffice for exhausting all the beauties of S. Mary's and the Abbey Church of the Holy Cross. The circular church of S. Chad—likened by a Yankee visitor to a Cheshire cheese and mustard pot—is more curious than beautiful. S. Alkmund's has a fine



CONDOVER HALL, SALOP.

By W. W. Naunton.



MANOR HOUSE, RUSHBURY.

By Martin J. Harding.

tapering spire, which, with that of S. Mary's, adds greatly to the general view of the town; one good point for obtaining this being reached by crossing the English Bridge and descending to the river banks. The Roman Catholic Cathedral, with two exquisite side chapels, should also be visited.

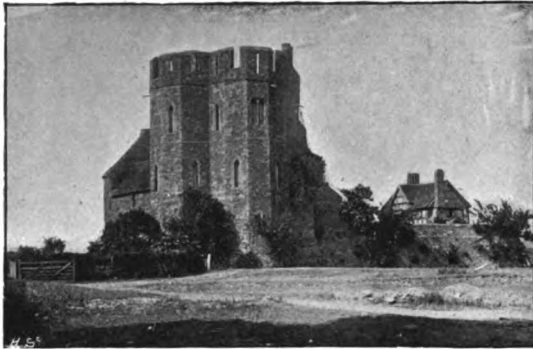
Archæologists will make a point of seeing Wroxeter—the Roman city of *Uriconium*—a

neighboring old-world villages, with their thatched roofs and simple country folk, who still cling to those primitive costumes which are so rapidly disappearing before the advance of modern fashion. The annual fair, on 14 May, brings many of them over the hills into the town, which nestles close under the Longmynd, the top of which stretches away in many miles of grouse-moor. Upon *Caer Caradoc*, the last stand of *Caractacus* was made against the Romans, many traces of whose encampments still remain. Here is a first-class hotel, at which a stay of some days cannot fail to be greatly enjoyed. Early summer is the best time for a visit, as later on the town is always very full.

STOKESAY CASTLE, one mile from Craven Arms Station, on the Hereford line, is an almost unique specimen of an ancient fortified mansion, in a perfect state of preservation, including a fine gateway house. This can be done from Church Stretton or Ludlow.

LUDLOW, 25 miles down the Hereford line, abounds in features of interest, including one of the finest parish churches in the kingdom. The castle (1086) is a grand example of an ancient border stronghold, and includes a circular chapel, with a richly decorated doorway. Magpie architecture is well represented in the

Feathers Hotel, and several other houses in and near the town. The river Teme flows close by, and offers many inducements to the picture-maker; but the finest stretch of river scenery in the district will be found five miles away, at Downton, the scene of Milton's "*Comus*," and should on no account be missed.



STOKESAY CASTLE.

By J. L. Della Porta.

pleasant five-mile drive, passing Atcham with its picturesque church on the banks of the Severn. A day should be given to Buildwas (1135) and Wenlock Abbeys, both fine ruins reached either by road (12 miles), or, *via* Severn Valley Railway to Buildwas Station (junction for Wenlock), and reserving an hour or two for the town of Wenlock, which includes excellent examples of old houses.

LILleshall Abbey (1145) is another beautiful ruin, $1\frac{1}{2}$ miles from Donnington Station on the Stafford line.

TONG CHURCH, 3 miles from Shifnal, on the G.W.Ry., contains several fine tombs, and a good example of vaulted roofing in its Vernon Chapel.

BRIDGNORTH, an hour's journey on the Severn Valley line, is picturesquely situated on the Severn, and contains many interesting subjects in the way of half-timbered buildings, notably the Town Hall and Bishop Percy's House. The river is worth following as far as Arley, and even beyond, the banks being well wooded.

A very enjoyable river trip can be made by hiring a boat at Shrewsbury and rowing down stream (40 miles) to Bridgnorth. This is too much for one day if stops are to be made for camera work, in which case the journey can be broken at Cressage, where there is a capital riverside inn.

CHURCH STRETTON, 12 miles away on the Hereford line, will prove a happy hunting ground for the lover of pure landscape. Its beautiful hills and valleys, on a scale easily grasped by the camera, lend themselves most readily to photography. Charming pictures can be made in the



STOKESAY CASTLE.

By John W. Ellis.

Here also is the Hay Mill, much frequented by artists of the brush.

THE WREKIN (1,250 ft.), with its finely-wooded surroundings, is worth climbing, if only for the grand views, extending over fourteen counties. Frequent trains to Wellington Station, from which it is two miles distant.

CONDOVER HALL, four miles by road, or one

from Condoover station, is a splendid Elizabethan mansion.

Old manor-houses, both stone and half-timbered, are dotted all over the district, and too numerous to detail. The one illustrated is at Rushbury, near Church Stretton.

Those who prefer settling down in headquarters at Shrewsbury, will find no difficulty in working the whole district from there; but in the event of several days being available for each place, it would be desirable to make a stay at Church Stretton and Ludlow.

Shrewsbury is well served by the Great Western and L. & N. W. railways, there being several fast trains from London and the North and West of England. During the summer cheap tickets are issued from Shrewsbury to most of the places named.

Local guide books are on sale at the booksellers in all the towns referred to.

Good stocks of plates, &c., are kept by the dealers in Shrewsbury, Ludlow, and Bridgnorth.

HOTELS.—Shrewsbury: The George, Raven, Crown, Royal Lion, Unicorn, Clarendon. (Any one desiring private rooms will be supplied with a list upon application—including return postage—to the writer, at 6 Havelock-road, Shrewsbury.) Ludlow: The Feathers', Angel, Bull. Bridgnorth: Crown. Church Stretton: The Stretton Hotel Co.

DARK ROOMS.—Shrewsbury: Shropshire Camera Club, Adnitt & Naunton, Della Porta & Co., J. Laing, Unicorn Hotel. Ludlow: Mr. Jones, photographer, Broad-street; G. Woodhouse, chemist, Bull Ring. Bridgnorth: Mr. Bromwich, photographer. Church Stretton: The Hotel.

The foregoing rough outline by no means exhausts the photographic resources of this district. The northern division of the county has not been touched, and will alone provide ample material for a future No. of "Beauty Spots." The ground now covered will be found to be a veritable storehouse of work, both to the archaeologist and the landscapist. The former, after doing the four ruined abbeys already noticed, and the castles, will still have a great number of old churches and manor-houses to follow, many readily accessible and others hidden away in remote corners of the county, but well worth hunting out. The landscapist will find a practically inexhaustible field in the beautiful rivers, the hills and valleys, and last, but by no means least, the many miles of moorland, stretching over the Longmynd at Church Stretton right away to the Stiperstones.

Visitors to this locality will, I think, be inclined to parody the well-known lines in the *Ingoldsby Legends* (referring to our Shrewsbury cakes), and say—

"Oh, Salopia, Queen of picture-making fields,
The mouth liquefies at thy very name!"

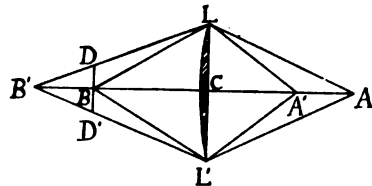
Depth of Focus.

By REV. T. PERKINS, M.A.

MANY interesting results, some of them of much practical importance, can be deduced from the fundamental equation connecting the focal length of a lens, and the distance of its conjugate foci from its centre. In the present article the influence of focal length and aperture on depth of focus will be discussed; the results being deduced from certain equations, themselves derived from the fundamental equation mentioned above. In order that the article may be intelligible to the reader whose mathematical knowledge does not extend beyond arithmetic, the resulting formulæ only will be given in the text, the mathematical calculation by which they are obtained being given in foot notes; these notes will be easily understood by any one who has a fair knowledge of elementary algebra, but may be omitted by the non-mathematical reader.

It will be well in the outset to define the term "depth of focus." Strictly speaking no perfect lens has any depth of focus whatever, but the term is in general use, and is a convenient one in practice. Its meaning may be thus explained. If an object at a certain distance lying on the axis of the lens is accurately focussed, a strong magnifier being used to ensure absolute accuracy, it will be found that the focussing screen may be shifted a certain distance on either side of the position of absolute focus without any appreciable loss of definition, judged by the eye alone; or what comes to the same thing, it will be found that other

objects lying along the axis of the lens somewhat nearer or further off than the one accurately focussed will appear equally sharp. This range of *practically* sharp focus is called the "depth of focus." In reality, any point nearer or further from the lens than the point accurately focussed will be represented by a circular disc. We often see such circular discs of light in photograms when any bright point occurs in the background of a picture, such as small portions of sky seen through tiny apertures in foliage, when foreground objects are focussed, especially if a large stop is used. But these discs, if their diameters are small, appear to the eye as points, using the word "point" not in the strict mathematical sense, but



in its ordinary acceptation. What is the largest size of these discs or "circles of confusion" consistent with good definition cannot be absolutely stated; it depends to some extent on the keenness of the eyesight of the observer, and partly on the distance at which the picture is viewed; but for convenience sake, it is generally assumed by those

using English measures that the diameter of the largest admissible circle of confusion must not exceed the hundredth part of an inch.

The reader should now turn to the figure. In this A represents a point, rays from which are brought to accurate focus at B by the lens LCL^1 ; A^1 a point nearer to the lens rays from which after passing through the lens converge accurately to B^1 ; if the ground glass focussing screen is so placed that B is upon its surface, the rays proceeding from A^1 will not be represented on it by a point but by a circle whose diameter is DBD^1 .

It will be found by the calculations given in the note * that $DBD^1 = \frac{f^2 + AA^1}{n + CA + CA^1}$ approximately where f represents the focal length of the lens, and n the denominator of the fraction giving the focal ratio ($f8, f11, x.$) at which the lens is being worked.

From this it is easily seen that if the objects remain at the same distance from the camera, and use a longer-focussed lens and work it at the same focal ratio, we increase the diameter of the circle of confusion, and increase it not simply in the same ratio as we increase the focal length of the lens, but in the square of this ratio. Thus if we double f we increase the diameter of the circle of confusion fourfold; if we treble f , then the diameter of the circle becomes nine times as great, and so on. Hence, if with a certain lens working at $f8$ DBD^1 is just $\frac{1}{100}$ inch—the largest allowable size—we shall find if we use a lens of double the focal length, that DAD^1 becomes only $\frac{1}{25}$ inch, and the point A^1 will appear out of focus; in order to keep DAD^1 within the assigned limits we shall have to alter n from 8 into 32, that is we must use a stop of $f32$ instead of one of $f8$, thereby necessitating an exposure sixteen times as long.

From this it will be seen how very rapidly the depth of focus decreases as longer and longer-focussed lenses are used. Hence, if we wish to take a certain view from a particular point and to secure considerable depth of focus while using a large stop, we must employ a short-focussed lens, and not a correspondingly small plate. An enlargement made from a small negative thus taken will have greater uniformity of definition than a large direct negative will have, unless a much smaller stop be used and a much longer exposure given.

* Following the usual notation we denote AC, A^1C, BC, B^1C by u, u^1, v, v^1 the diameter of circle of confusion by d the focal length of the lens by f , its aperture by a .

We shall have $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$ $\frac{1}{u^1} + \frac{1}{v^1} = \frac{1}{f}$

Referring to the figure, by similar triangles we have

$$\frac{d}{a} = \frac{BB^1}{B^1C} = \frac{B^1C - BC}{B^1C} = \frac{v^1 - v}{v^1}$$

but $\frac{1}{u} + \frac{1}{v} = \frac{1}{u^1} + \frac{1}{v^1}$ since each = $\frac{1}{f}$ $\therefore \frac{1}{v} - \frac{1}{v^1} = \frac{1}{u^1} - \frac{1}{u}$
hence $\frac{v^1 - v}{vv^1} = \frac{u - u^1}{uu^1}$ and $\frac{v^1 - v}{v^1} = \frac{v(u - u^1)}{uu^1}$

hence $\frac{d}{a} = \frac{v(u - u^1)}{uu^1} = \frac{f(u - u^1)}{u^1(u - f)}$ since $\frac{1}{v} = \frac{1}{f} - \frac{1}{u}$

But if we express the aperture in terms of the focal length $a = \frac{f}{n}$ we get $d = \frac{f^2(u - u^1)}{nu^1(u - f)}$

Moreover as f is generally small in comparison to u we will neglect it and we get $d = \frac{f^2(u - u^1)}{nuu^1}$

But another question arises which the equation given above will answer, and this is a question of importance: it is this—"How will depth of focus be affected if a longer-focussed lens be used, but the camera placed at a greater distance from the object so that in the negative it may appear of the same size?" For example, I want to take a full-face head of a certain size on a quarter-plate. I find that at a certain distance I get the nose practically sharp when I focus the ear with a 5in. lens, using stop $f8$. What will be the effect on depth of focus of using a 10in. lens, also working at $f8$, if I move the camera to twice as far from the sitter. In this case f is doubled, n remains the same, but CA is exactly doubled, and CA^1 is rather more than doubled, so that the product of $CA + CA^1$ is increased rather more than four times, while f^2 is increased exactly four times, so that the diameter of the circle of confusion is slightly reduced, and the definition of the image of A^1 is, if anything, slightly better than before, though that of a point lying in the direction CA , rather further off than A , will be somewhat worse than before.

But for all practical purposes, unless A is at a considerable distance, we may say that the depth of focus remains about the same. This is a point well worth bearing in mind, as it shows that we need not hesitate to use a long-focussed lens for portraiture or similar work, when we want the head or other object of a certain size, from any fear that we shall have to use a smaller stop entailing a longer exposure if we want to get the whole head into as good focus at the same time as before. This is fortunate, for it is well for other reasons sometimes to use as long a focussed lens as the limits of space in the studio allows. For it is evident that if the respective distances of the nose and ear from the camera are 10ft. and 10ft. 6in. a much better proportion will be maintained in the photogram between them than if they were 2ft. and 2ft. 6in., for in the former case the size of the nose in proportion to the ear would only be increased in the ratio of 21 to 20, while in the second it would be increased in the ratio of 5 to 4.

But to return to our equation

$$DBD^1 = \frac{f^2 AA^1}{n + CA + CA^1}$$

We may from it deduce the value of CA^1 (see note †)

it will be found to be $\frac{f^2 CA}{f^2 + n CA + DAD^1}$ and in like manner, if A^* is a point in the direction of CA but further off, we get

$$CA^* = \frac{f^2 CA}{f^2 - n CA + DAD^1}$$

DAD^1 being now the circle of confusion for the point A^* if we give DAD^1 the value $\frac{1}{100}$ in., or any other value we decide upon, we get CA^1 and CA^* , and by subtracting the former from the latter

$$\dagger \text{ Thus obtained } d = \frac{f^2(u - u^1)}{nuu^1}$$

whence $nuu^1 d = f^2 u - f^2 u^1$

from this $(nu d + f^2) u^1 = f u \therefore u^1 = \frac{f^2 u}{nu d + f^2}$

LA'' or u'' being found on the same way from $d = \frac{f^2(u'' - u)}{nuu''}$

we can get A^1A'' , the utmost limit of the depth of focus when the object accurately focussed is at the intermedial point A . A numerical example is appended to show how this may be done.

Suppose the distance is 20ft., the lens a 1oin. one working at $f8$

$CA^1 = \frac{10^2 + 240}{10^2 + 8 + 240 + \frac{1}{100}} = \frac{24000}{100 + 19\frac{1}{10}} = \frac{24000}{119}$
inches nearly = 201 inches approximately, thus A^1 is about 39 inches near than A .

Sim. $CA'' = \frac{24000}{100 - 19\frac{1}{10}} = \frac{24000}{81}$ inches nearly = 296 inches, or A'' is 56 inches beyond A . Thus all objects from about 17ft. to 25ft. will be in focus.

If a 5in. lens be used and the distance from it to the object A is reduced to 10 feet, so that its image may be the same size as before, it will be found that CA^1 will be about 87 inches, and CA'' about 194 inches. Thus, all objects from 33 inches in front to 74 inches behind the point focussed will be practically in focus, a total range of about 9 feet instead of 8 feet, as in the case when a 1oin. lens is used.

We might have put the equation given above in the form

$$AA^1 = n CA + CA^1 + DBD^1$$

and similarly obtain another

$$AA'' = n CA + CA'' + DBD^1$$

from which, as CA'' is greater than CA^1 , we learn that the range of focus beyond A is greater than it is on the nearer side of A .

From the equation $CA'' = \frac{f^2 CA}{f^2 - n CA + DAD^1}$ we see that when the denominator is small CA'' will be great, and that when it is zero, which it will be when $CA = \frac{f^2}{n DAD^1}$ then CA'' will be infinitely great; that is to say, all objects beyond A will be in practical focus at the same time as A .

To apply this practically, let us see what point must be focussed accurately in order that all points lying beyond it may be in practical focus, if we use a 6in. lens working at $f8$. Putting $n = 8$ $DAD^1 = \frac{1}{100}$ $f = 6$ we get

$$CA = \frac{36 + 100}{8} \text{ inches} = 37\frac{1}{8} \text{ feet.}$$

If we substitute this value of CA in the expression for CA^1 , we shall find that CA^1 becomes $34\frac{1}{8}$ ft.; in other words, all objects beyond about 34 ft. will be in focus. But if any one does not care for this amount of accuracy, he may rest content when he has obtained the distance CA ; for by assuming this as the distance beyond which all objects will be in focus, he will be on the safe side, for his lens will do a little more than this—that is, it will bring objects a little nearer to him into practical focus also. The rule for determining CA , if put into words, is as follows:—Square the focal length of the lens, multiply by 100, and divide by the denominator of the fraction $f8, f11$ etc. marked on the stop which is used; this will give CA in inches.

How to make a Developing Table and Sink.

BY FRED. W. COOPER.

GOOD negatives can be produced by some people under any circumstances—either by using the drawing-room table for the dishes, with a bucket or two of water on the floor alongside; on the kitchen slopstone, or in any other such unenviable position; but for those who have a separate room or part of one set apart as a dark-room, by far the best plan is to fit it up properly with the necessary tables, sink, shelves, loose cupboard, etc.; and if the work is done by the photographer himself this need not be expensive in any way. The writer has fitted his own dark-room and made everything comfortable and convenient. The following has been written for those who are handy with ordinary joiner's tools, or those who have the necessary cash to pay for the work being done. The cost of the material is very little, the sink and table, etc., when complete, a perfect boon to those who like comfort and utility combined.

The following materials will be required:—

No.	Description.	in.	in.	ft.	in.	Cost. about. s. d.
1.	Cross pieces ... 2 pieces deal	3 x 3	3 x 3	6	planed...	0 6
2.	Legs 4 "	2 1/2 x 2 1/2	x 2 1/2	6	"	1 0
3.	Stays 4 "	3 x 3	x 1 1/2	4 1/2	"	0 7
4.	Shelf 1 "	6 x 6	x 3	6	"	0 4
5.	Top bar 1 "	2 x 2	x 3	6	"	0 3
6.	Table top, &c... 7 "	6 x 6	x 1	8	"	1 2
7.	Tank bottom ... 3 "	6 x 6	x 1	6	"	0 8
8.	Tank sides 2 "	3 x 3	x 1 1/2	4 1/2	"	0 5
9.	Lid battens ... 2 "	2 x 2	x 1	4	"	0 3

1 lb. nails, 1 1/2 in., 2 in., 3 in. mixed wire (French) ...	0 2
2 buckets (one a little larger than the other) ...	1 8
1 yard best rubber tube, 1/2 bore... ..	0 8
1 small 3/4 gas tap	0 6
4 sq. ft. of 4 lb. sheet lead } see below.	
1 foot 3/4 lead pipe	
1 ft. 6 in. 3/4 lead gas pipe	0 3
1 d. smallest size copper tacks or zinc tacks	0 1
	8 6

The price of lead and outlet pipe is omitted because the best way is to take the frame, when complete, to a plumber, and get him to put a lead trough in the place made for it, and to fix a piece of lead pipe as shown in sketch.

See that all the timber is sound and free from large knots; many people have spare wood at hand that can be cut to sizes named and thus save the cost of purchase.

After all the material has been cut to sizes mentioned, planed, and the edges and ends made square, proceed as follows:—

Place the two pieces No. 1 on edge, not flat, parallel to each other and with 1 ft. 4 1/2 in. between the two, then nail one of the seven boards (No. 6) at each end, leaving 1 in. overlapping at front and back; now nail another of these seven boards alongside those already fixed at each end, this will leave a space of 1 ft. 6 in. between the two pairs, next fix the two pieces (No. 8) just under the boards last mentioned, as shown at A sketch No. 1, and nail through the side pieces; these form sides

for the lead trough, the ends, of course, being formed by the cross pieces (No. 1).

Turn the frame over and nail the three boards (No. 7) over the hole to form bottom of tank, now fasten the two battens (No. 9 on list) across the three remaining pieces of No. 6 lot to form a lid for the lead tank when not in use. These battens should be $1\frac{1}{2}$ in. from the edge at each end (see sketch No. 2) so as to hold the lid in place and prevent its slipping backward or forward by fitting just inside tank at each end; the woodwork of top is now complete.

Take the four pieces (No. 2) which form the legs and place them parallel on floor or bench $11\frac{1}{2}$ in. apart (inside measurement) and 4 in. from top, nail one of the four pieces (No. 3) across; nail one piece of same lot across 12 in. from bottom, leaving a space of 11 in. between the top edge of each. Do the same with the other two legs—see sketch No. 2. Next get someone to help you to place the top in position on the legs, the upper ends of legs should fit exactly to each end of the cross pieces. Put one or two nails in each corner, then nail No. 5 across the two top side pieces, and No. 4 across the two bottom side pieces to form a shelf—the woodwork will now be complete.

Bore a hole $1\frac{1}{2}$ in. in diameter in the right-hand back corner of bottom of tank frame and then

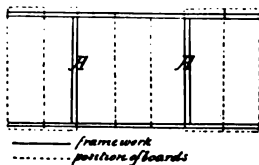


FIG. 1.

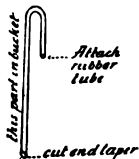


FIG. 3.

interview your plumber. Instruct him to make a lead tank of 4 lb. lead (that is 4 lbs. to 1 sq. foot, about 4 sq. feet will be required) to fit your wood frame, it should be 1 ft. $4\frac{1}{2}$ in. \times 1 ft. 6 in., and 3 in. deep outside measurement, with a 1 ft. piece of lead pipe $\frac{3}{4}$ in. bore soldered in position to pass through the $1\frac{1}{2}$ in. hole at back; the reason for making this hole so large is to allow a little adjustment, and also so that the lead round top of pipe can be pressed into it, to prevent anything from lodging there. When the lead is in position fasten along the top edges with small zinc or copper tacks about 2 in. apart. This tank may be made of tin, iron, or any other suitable material, but lead is by far the best, as none of the chemicals used in photography are likely to have any effect on it, of course excepting concentrated acids which are not likely to be poured down the sink. The lead tank complete should not cost more than 6s. or 7s., but that all depends upon the conscience of the plumber who makes it. The next job is to string or wire the shelf from the piece above to form a rack for dishes; thin galvanized iron or copper wire is best. This work is easily done and very convenient, as the dishes do not contaminate each other when so placed, and are always at hand when required. The wires should be about $1\frac{1}{2}$ in. apart or as broad as the dishes in use, fasten them in position with small tacks or staples top and bottom, or wood partitions may be used instead of wire if so desired.

The water supply can be from a tap fixed above the tank, and the outlet can discharge on to a gully

below if the dark-room is permanent, but where the photographer does not wish to go to this expense, or where it is likely there will be a removal to another house now and then, a very satisfactory and cheap method is to procure two buckets, one larger size for the waste and a smaller one to contain the water to be used, which is put on a shelf above, or hung from the ceiling, or in any position that may be convenient so that it is above the head. A piece of $\frac{3}{8}$ lead gas pipe bent as per sketch No. 3, with a piece of rubber tube attached of the required length, and a small tap at the end, will form an excellent water supply.

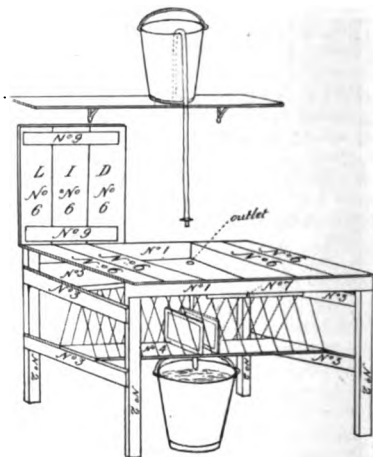


FIG. 2.

To use—fill the small bucket, place bent lead tube in position with the rubber tube and tap hanging over the tank, and turn tap on, then suck the tap until water is drawn over the highest point of tube, that is at top of bucket. When tap is on, the water will continue to flow until the bucket is completely empty; the lead tube must reach to the bottom of the bucket and have the end cut as



FIG. 4.

shown in sketch No. 3. The whole arrangement is shown complete in sketch No. 2; it is merely a simple symphon, but very effective, less trouble, and costs less than a metal tube and tap soldered into a bucket. A small rack for dishes should be fitted in the sink; it can easily be made out of

7 pieces of wood, $\frac{1}{2}$ in. \times $\frac{1}{2}$ in. \times 1 ft. 4 in.
 3 " " $\frac{1}{2}$ in. \times $\frac{1}{2}$ in. \times 9 in.
 put together as per sketch No. 4; this is very useful and keeps the bottom of dishes dry and out of the mixture of chemicals which are sure to accumulate in the sink when in use. When the lid is placed in position over the sink and a clean newspaper put on as a tablecloth, mounting or any other such work can be done with ease and comfort, and no fear of the cooking department wanting the table for supper just when you are in the midst of mounting a batch of prints that must be ready for the exhibition to-morrow. Try this arrangement—cost very small, advantages large, utility, economy in chemicals, etc., comfort, privacy—as there will be no attempts to mix the bread on such a table—and many others too numerous to mention.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

Cadett & Neall, Ashstead.
W. Webber & Co., Plymouth.
T. H. Powell, Denmark Hill.
The "Moonlight" Lamp Co., Liverpool.
The Strand Engraving Co., Strand.
Vincent & Blaikley, Barbican.
Swan Sonnenschien & Co., Ltd., Paternoster Square.
The Sandell Works Co., Ltd., South Norwood.
The Premier Dry Plate Co., Ltd., Notting Hill.
E. G. Wood, Cheapside.

New Goods, &c., Advertised.

Hand Camera Lenses. Ross & Co.
The Cathodal Plate. B. J. Edwards & Co.
Process Cameras. Penrose & Co.
"The Process Year Book." Penrose & Co.
The Memorator. W. Webber & Co.
The "Repeater" Changing-Box. The Albion Albumenising Co.
Snap-Shot Competition. Cadett & Neall.
The Cupreous Art Studio. Vincent & Blaikley.
Half-Tone Works, &c. The Strand Engraving Co.
Electro Compressed Developer. T. H. Powell.
"Vogel's Practical Pocket Book of Photography." Swan Sonnenschien & Co., Ltd.
The Sandell Plates. The Sandell Works Co., Ltd.
Celluloid Films. The Premier Dry Plate Co.
Photo Outfit, &c. E. G. Wood.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk (*) indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

The "Runaway" Dry Plates. Price: Quarter-plate, 1s. 3d.; half-plate, 3s.; whole plate, 5s. 6d. per dozen. F. W. Verel and Co.

The "Cathcart" Plate. Price: Quarter-plate, 1s.; half-plate, 2s. 3d.; whole plate, 4s. 3d. per dozen. F. W. Verel and Co., Cathcart, Glasgow.

Hinkin's "Velofylma." April 13th. F. R. Hinkin, Royston, Herts.

APPARATUS.

Tylar's P.O.P. Washer.* March 27. Price, for quarter-plate, 4s. 6d.; half-plate, 8s. 6d.; whole plate, 12s. 6d. each. W. Tylar, 41 High-street, Aston, Birmingham.

"The Repeater Changing-Box." March 30. Quarter-plate, 35s.; half-plate, 40s.; whole plate, 50s. The Albion Albumenising Co., Glasgow.

CAMERAS.

"The Aye Ready." March 30. Half-plate, £4 5s. With changing-box, £4 12s. 6d. The Albion Albumenising Co., Glasgow.

The Griffiths' Magazine Hand-Camera. April 11th. To hold twelve plates. Price £2 2s. The Blackfriars Co., 1 Surrey-row, Blackfriars-road, S.E.

"Enlarging, Manchester" has been registered as the telegraphic address of The Manchester Photographic Enlarging Co.

Sydney J. Barton informs us that he has removed from 45 East Leith Gate, Doncaster, to larger and more convenient premises at 10 Hall Gate. He stocks photographic goods, and has a dark room for visitors.

The Cathodal Plate.—Messrs. B. J. Edwards & Co. are now supplying a new plate specially prepared for use in photographing by the X-rays, and made in accordance with suggestions from Prof. Oliver Lodge, of Liverpool.

The "Clipper" adjustable plate lifter and holder is about the best of the many forms that we have seen, and will doubtless be very largely adopted by persons of cleanly and tidy habits. It is placed on the market by the patentee, Frederick Iles, of Birmingham.

Taylor, Taylor & Hobson advise us that Cooke Lenses, series V. f/8 of gin. focus for 8 by 5 plates, and 11in. focus for 8½ by 6½ plates, are now on the market. We feel sure that these larger lenses will be welcomed by many of our readers. Our own use of the smaller sizes have given us very great satisfaction.

The "Kombi" Camera European patents have been bought by R. Bentz & Co., 50 Rue Pergolée (Porte Maillote), Paris. This firm is now establishing agencies throughout Europe; all orders sent to the old firm (at 36 Oxford-street., W.) will be forwarded to the new proprietors, and receive due attention.

F. W. Verel & Co. are pushing their "Cathcart" and "Runaway" Plates among photographers requiring plates of extreme rapidity. The "Cathcart" is a thoroughly quick plate, well coated, and easy to develop. The "Runaway" acts up to its name, and works with a speed that is almost startling; it is extra thickly coated, and should meet with a genial welcome among users of the hand camera.

Griffiths' Two Guinea Hand Camera, magazine form, has been submitted to us by the wholesale London agents, the Blackfriars Photographic and Sensitising Co. It is a thoroughly well-made and workmanlike little instrument, and seems bound to command a very considerable share of success. The magazine carries twelve plates in sheaths, and the changing is effected by a bag arrangement. The shutter is very well designed, and works perfectly for both time and rapid exposures.

Designs in Mounts have been so immensely improved of late that it is difficult to suggest further alterations which shall be both novel and artistic. Samples just received from O. Sichel & Co. possess both these qualities. They include new combinations of delicate greys, with white lines and white or aluminium stamping. A specially attractive form is a delicate grey board with white bevel, mounted on a darker grey of great thickness, with wide white bevel, the mounted board being surrounded by a white line at a distance of about ½ inch. It makes a wonderfully effective platinotype mount for the show case.

"Velofylma" is a varnish suitable for films, glass negatives and positives, prints upon paper and opal. It is applied cold by means of a broad camel's hair brush moderately charged, too much tending to produce wavy lines. No heating is required before or after application. A thin coat applied to the back of paper prints effectually waterproofs the paper and prevents the mountant striking through and destroying the gloss. The varnish dries rapidly, leaving a fine surface at the ordinary temperature of the air. The gloss of burnished or squeegeed prints can be enhanced by a thin coat of the varnish. Water and oil color may be used upon it without injury.

The "Aye Ready" Camera is distinctly good, in that it consists of a stand camera in a permanent case. The back of the case falls down, and holds the three double dark slides or the changing-box with which the camera is provided. The front racks into the main body and is covered by the folding base-board, so that the whole concern, with the lens in position, is opened or closed with the greatest

rapidity, and as the camera forms its own case it is very portable. The outside, when closed, is either a rough durable waterproof canvas, or solid leather, and in either form will stand an immense amount of wear. It is a sensible business-like outfit, and very good value for the price.

A *Telling Advertisement* was secured by one of the advertisers in the exhibition catalogue of the Rotherham Society. He took a full page space, and inserted in the centre the following notice:—

NOTICE

This space has been let to SMITH, of Masbro', but his Portraits are too well known to need advertising.

Tylar's P.O.P. Washer is one of the latest additions to our museum. It is well made, and neatly japanned outside and enamelled white within. Upon turning on the



water, the prints begin to revolve in a steady manner, which is continued until the water is turned off. The block shows the washer in action.

The "*Repeater*" *Changing-Box* is quite different from the many plate-changing devices that have been on the market, and is difficult to describe. It takes plates in special black negative bags, and the tourist who wishes to use it will place each of his plates in one of these bags before leaving home, and carry them in the original plate-boxes. They are exposed in dark-slides, which can be safely filled in daylight. When the slide is in the camera the drawing of its shutter tears off the black paper, and prepares the plate for exposure. After exposure, the particulars can be written on the back of the black envelope, which then, with its enclosed plate, is transferred to the changing-box. When a dozen are in this box they can be transferred to the original plate-box with the greatest ease. Every operation can be done in daylight; and not the least advantages of the system are that it tends to encourage regularity in recording exposures, and to prevent any possibility of scratching or fogging, which often afflict the plates changed under the inconvenient conditions of a country hotel. We should need a few weeks' practical working before finally declaring in favor of any changing device, but the one under notice has certain distinct advantages, and its action, in the few tests we have been able to make, seems perfectly certain and satisfactory.

CATALOGUES.

RADIOGRAPHIC APPARATUS in the greatest variety, together with apparatus for illustrating many of Crookes' well-known experiments with vacuum tubes, is described in a catalogue issued by W. I. Chadwick, of Manchester. Of some of this apparatus we shall give further particulars next month.

FILMS FOR RADIOGRAPHY have been placed upon the market by E. H. Fitch, and although at the time of writing

we have not had an opportunity of testing them, Mr. Fitch's well-known ability should guarantee their suitability for the purpose. We shall report upon them more exhaustively next month.

THE 1896 CATALOGUE of the excellent lenses of Wray gives special attention to the *Platystigmat*, the lens which was described very fully in our issue of January (1896). Six different sizes of these lenses, from 4in. to 8in. focus, and covering plates from 3½in. square to 12 by 10, are now ready for the market. Our own use of one of the smaller sizes, since it was introduced some months ago, fully confirms the very good opinion that we then formed of its performance.

COMPRESSED DEVELOPERS, toning baths, etc., in great variety, are described in a little catalogue just issued by T. H. Powell, Denmark Hill, the pioneer in this direction. The catalogue also contains particulars of a few miscellaneous sundries, such as a useful tinted varnish for local application to defected negatives, anti-halation backing of carame and sienna, silhouette masks, etc.

ANDREW RIDDELL, 139 W. George-street, Glasgow, has issued a capital catalogue of 136 pages. It is very concisely arranged, and very fully covers the whole subject of photographic apparatus and materials. The different sections are printed on different colored papers, so that any of them can be easily turned to by one who is used to the catalogue, and under these different sections the arrangement is simple and good.



Photograms for Xmas Cards can be made now, though the competition announced in our February issue does not close until Nov. 20th.

Our Illustrations.—Practically the whole of the blocks in this issue are made by Hare and Co., Bride Court, Fleet Street, E.C. We give in *The Process Photogram* a full description of this firm.

We think that the last few issues of *The Photogram* have been specially worthy of support. We want to circulate 12,000 and are sticking fast just below 11,000. Can you help us by a judicious word to a friend who is not a subscriber?

Instead of an Exhibition the Bournemouth Photographic Society has decided to hold three prize competitions amongst its members. After each competition the work will be exhibited in the society's rooms. The judging has been left in the hands of the editor of *The Photogram*.

A *Memorial* to the late Mr. Thomas Samuels has been taken in hand by an influential committee with Mr. Lambert Matthews, an old friend and neighbor of the deceased, as secretary. The intention is to place a simple memorial tablet in the Parish Church of Hadley, and to devote the remainder of the fund to the benefit of Mrs. Samuels.

Photograms of '96, a pictorial and literary record of the best photographic work of the year, is already in preparation on the lines that were so successful last year, but with improvements. The principal text will be by Gleeson White, with chapters on the work in America and the British Colonies by other writers.

We hope to be able to receive, select, and reproduce the principal work of the year prior to the opening of the exhibitions. By this means we shall be able to secure special care in the reproducing and printing—to print some of the

delicate works in color more suitable than black—and to issue the annual soon after the opening of the second of the greater exhibitions. To facilitate this object we will gladly visit the studios of workers who are preparing for exhibition; or pictures intended for offer to the exhibitions may be forwarded to us for selection, when we will either return them direct to their author or deliver them to the agents of the exhibition for which they are intended, at our own cost. In either case we undertake that the pictures shall not be seen by others than our own staff, and, in the case of those selected for reproduction, the blockmakers and printers. Those who will be prepared to submit pictures for our selection are asked to state:—

1. By what date they may be seen?
2. Fee, if any, required for right of reproduction.
3. Whether in reproduction, "Bartolozzi" red or warm brown would be preferred to black.

Those who are not able to submit any work of their own may be able to direct our attention to any specially meritorious work of hitherto unknown photographers. We are especially desirous of seeing any really good non-exhibited work, and fine novel work in the *applications* of photography (as, for instance, the underground work of J. C. Burrow which attracted so much attention a year or two back). We solicit offers of assistance and suggestions in any form, for with your cordial co-operation we trust to make our annual an overwhelmingly conclusive answer to those who try to belittle the position of photography amongst the arts.

Prize Competitions.

Competition No. 7.—Best three views of Shrewsbury and district. This has again been a very disappointing competition, as the entries have been very few indeed. Curiously enough (since it has been held that the competition would be limited to residents in the district covered) not a single Shrewsbury man competed. The best set received was from Dr. John W. Ellis, 18 Rodney Street, Liverpool, who sent three excellent prints, and to whom, therefore, we have awarded first prize.

Nothing worthy of a second prize was received.

Competitions Nos. 4 and 5.—Although these competitions closed on Feb. 29th, the fact of a number of foreign contributions coming in at the last minute has prevented the decision of the competition, even to the time of writing, as there has been delay in translating and securing adjudication by the whole staff. We shall, however, probably advise the competitors privately before this is published, and announce results in next issue.

SOCIETIES' PRIZES.

Present Scoring—	Society.	Points
	Edinburgh Photographic Society... ..	1½
	(Won by Miss Christian H. Curle.)	
	Leeds Camera Club... ..	½
	(Won by Morris May.)	
	Liverpool Amateur Photographic Association... ..	2
	(Won by Dr. John W. Ellis.)	

The Edinburgh Society, which stood first for the Societies' prize, is now half a mark behind Liverpool. As the next competition is for views in the Edinburgh district, they may pull to the front again, though we know that many of the Liverpool men have good negatives of "The Athens of the North."

Competition No. 8.—We offer prizes of £1 1s. for the best, and 10s. 6d. for the second best set of three photographs (landscape, seascape, or architectural, with or without figures), taken in Scotland, within 50 miles of Edinburgh. The last day for receiving competing prints is April 30.

Summer Competitions.—Similar prizes are offered for similar photographs in other districts of Britain, as follows:—

No. 9.—Views in Yorkshire. Closing May 31, 1896.

No. 10.—Views in Warwickshire. Closing June 30, 1896.

No. 11.—Views in London (within seven miles of G.P.O.) Closing July 30, 1896.

The photographs must all be of subjects accessible to the public, and preference will be given (all other things being equal) to subjects having some historical or literary interest.

The Glasgow Exhibition is being very ably taken in hand, and special attention is being given to photo-mechanical work and to radio-graphy.

The W. H. Harrison Fund.—The secretary reports that this fund is progressing fairly, though the sum already contributed is nothing like sufficient to be of permanent use to W. H. Harrison. At the time of going to press the amount is £24 3s.. We trust that those who are able and who have not yet contributed will send something, however little, to Fred. H. Varley, 82 Kennington Green-road, Highbury, N.

We regret to have to record the death of M. B. Brady, who died in the Presbyterian Hospital, New York, on January 15th. A full record of his life work as a photographer would read like a romance. In 1861, when Sumter was fixed upon, Washington was thronged by the men



who were to make history for America. Mr. Brady was sharp enough to see this, and made efforts to secure the portraits of all these, so that his Washington Gallery soon became famous, and he made a fortune in photographing men of national reputation. His gallery included, besides all the distinguished generals, admirals, and several presidents, nearly every army and navy officer of note.

A hasty visit to the army at the beginning of the war convinced him that photographs of the actual scenes of battle would be exceedingly

valuable. He obtained permission of Secretary of War Stanton, then constructed and sent to the front several wagons for photographic use, which followed the army from place to place. The negatives of these war pictures and portraits were sold to the United States Government a few years ago for \$25,000.

In 1851, Mr. Brady went to the London Exhibition and took the first prize. The same year he visited the galleries of Europe and found his pictures everywhere as far as Rome and Naples. A visit to his gallery was considered the thing; there one could gaze on the features of the greatest men and women the country ever produced.



1. "The Process Work Year Book." Price 2s., post free 2s. 6d., foreign, 3s. London: Penrose and Co.
2. "The Photographic Reference Book." Compiled by W. A. Watts, M.A., under the direction of Henry Sturmy. Price 6s., post free 6s. 3d. (London, Iliffe and Son.)

The price of The Australian Photographic Journal has been increased to 4d. per copy, 4s. per year.

"**Archives of Clinical Skiagraphy**," by Sydney Rowland, B.A., is to treat of and reproduce the results of radiography as applied to surgery.

The Optical Illusion which was reproduced on page 67 of our March issue, has been printed in rather larger form as a scientific curiosity by the author, Frederick Iles, of Birmingham. It sells at a penny.

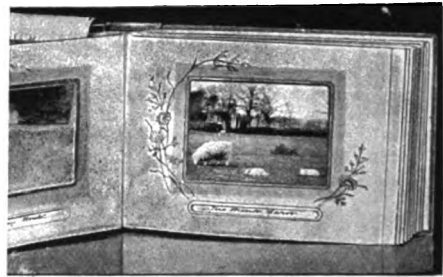
Radiography, a handbook of the practical application of the X-rays, is being prepared by H. Snowden Ward, in answer to a mass of correspondence and many questions after his lectures. It will be ready about the middle of May, and will be published at one shilling.

Eight Radiograms from negatives by Professors E. Waymouth Reid and E. Kuenen, of University College, Dundee, are published in an attractive form in the collotype view book series of Valentine and Sons. They are all extremely interesting subjects, perhaps the most interesting being a pair of tortoises, an exceedingly good frog, and the hand of a baboon compared with a human hand. The same subjects are also supplied as lantern slides, in which form they prove exceedingly attractive to popular audiences.

Pictorial Monthly Record.—Upon the note made in these columns in March we have received opinions from a number of the leading exhibitors and judges. Of these, twenty-seven were in favor of the project, sixteen were against it, and eight were indifferent. As we pointed out in our March issue the undertaking would be an exceedingly expensive one, and we do not think it would be

wise for us to give the space and go to the expense that it would necessitate unless the support is practically unanimous. A record of medalled pictures, unless it included practically the whole of them, would be of comparatively little value, and we, therefore, abide by the decision of our readers, and shall not, at present at any rate, take up the suggested record.

A new series of *Albums*, entitled the "Decorative," and published by Marcus Ward and Co., Ltd., decidedly deserves success. Each page has an opening surrounded by a wide line in gold powder, and this again by a faint tint. Around the opening is displayed a spray of leaves and flowers in gold powder outline. The mounts are of the slip-in variety, specially intended to take unmounted prints, and under each picture



opening is a space or white card (removable) on which the title may be written. The leaves are hinged and guarded, so that the book lies flat wherever it is opened. We illustrate a leaf of one of these albums, and the only suggestion we can make for its improvement is that a good color should be substituted for the gold powder in the printing. The prices are very reasonable.

"**The Photographic Reference Book**" (2) is not, according to its compilers, either a dictionary or a cyclopædia, and the difference between it and the books of Wilson, Wall, and Woodbury (curious that this last book should also be compiled by a W;—Watts) is that it treats on how to do everything in connection with photography. It is almost entirely compiled from the "Question Box" column in *Photography*, and the compiler has very carefully and thoroughly done the work of collecting and arranging. The matter is arranged according to subjects, Chapter I., Cameras, and Apparatus connected therewith; Chapter II., Chemicals (wastes, stains, etc.); and so forth. It seems difficult to imagine a subject on which some information is not given, and though there are some paragraphs which, we think, might well have been omitted, this is no real disadvantage. The chapter on "Subject (how to photograph)" will be distinctly useful, as it gives practical hints for dealing with animals, astronomical, clouds, fabrics, flowers and fruit, frost, ghosts, etc., etc. Altogether, although we prefer the dictionary or encyclopædia method when making such a book, the one before us cannot fail to be of real value to any working photographer, and it is pretty sure to take its place as one of our standard works.

"*The Process Year Book*," although not quite ready for the public at the time of going to press, may be confidently described as a thorough success, and will be on sale by the time this is published. The unbound proofs which we have seen show that both as regards matter and style it is far ahead of the very successful first number that was issued last year. We shall review it more fully in *The Process Photogram* next month. Meanwhile, we may say that it covers a great deal of ground with useful articles, and has a collection of illustrations very completely representing the process work of Great Britain up to date. Amongst the more important illustrations are a photogravure by Thomas Huson, R.I., R.P.E., from one of his own paintings; and a photogravure by T. R. Annan and Sons, from a photogram by J. Craig Annan. The half-tones include some exceptionally fine work, and some which are useful as serving to show how much is yet to be learned by many British block-makers. We need hardly give any recommendation as to the purchase of the book, for we know that the edition is limited, and feel quite sure that it will be almost immediately exhausted when seen.

Radiography.

Fluorescent Screens are offered by W. Watson and Sons at from 25s. each. The same firm also advertises all classes of apparatus for the new photogram.

A few excellent Lantern Slides are published by Leo. Atkinson & Co., Greenwich, London, S.E. They sell at 1s. each, and include a chicken's foot, human foot, key through wood and cardboard, etc.

A Special Plate for radiography is advertised by Dr. J. H. Smith & Co., Zurich, at a price 10% higher than their ordinary plates. Owing to a business agreement, these plates cannot be sold on the British market.

Professional Radiography is undertaken by W. E. Gray, F.R.P.S., 92 Queen's Road, Bayswater; by G. Ridsdale Cleare, 97 Lower Clapton Road, N.E.; by Friese Greene, and by Appleton & Co., Manningham Lane, Bradford. Messrs. Leo. Atkinson & Co., 193 Greenwich Road, S.E., also inform us that they have fitted up a laboratory for the production of radiograms for medical men and others.

The race for the spine has been quite as exciting to those who were connected with it as the race to the Pole is found to be by explorers. We believe that Dr. Macintyre, of Glasgow, was the first to be able to complete a radiographic survey of the body of an adult, but in obtaining radiograms of the spine through the body, he was very closely followed by Dr. Hall Edwards, of Birmingham, Appleton and Co., of Bradford, A. F. Stanley Kent, of St. Thomas's Hospital, London, and others.

Radiographing the skull.—Dr. Macintyre, of Glasgow, has shown that it is quite possible to radiograph the bone of the skull, and to show very complete details of its structure. This is rendered possible by the fact that the thickness

of the head allows considerable dispersion of rays, so that the varying structure of the side of the skull furthest from the dry plate causes no definite shadow at all, while the one that is nearest to the plate gives a perfectly sharp image, full of detail of the bone structure.

The Radiogram of a Hand with supplementary thumb is interesting as being an unusually short exposure. The total was fifty seconds, with a Herbert Jackson pattern tube.



HAND WITH SUPPLEMENTAL THUMB.

The first and second fingers show traces of movement, but as the child moved its hand very considerably several times after the first fifteen seconds of exposure, we are inclined to think that practically the whole of the reduction of the silver was caused in the first fifteen seconds. Seeing the little sitter was restless, we held its hand on the plate after it had moved until at the end of fifty seconds it became too restive to be held, and we developed the plate merely in the hope that it would give a guide to the exposure necessary with the tube.

Wimshurst Results.—We received, just too late for mention in our last issue, some very good examples of radiography by means of a Bonette-Wimshurst machine, specially designed for the work by R. Tudsbury & Sons, of Newark. These are the first results we have actually seen from such a source of supply, though we have heard of fair results being obtained by various workers. Mr. Wimshurst himself, who has probably the best Wimshurst apparatus next to Lord Blythwood, has spent considerable time in attempts at radiography, but without very satisfactory results.

In the Provinces.—The interest in radiography seems by no means to have abated. Most

of the principal cities have provided crowded audiences for one or more lectures by local scientific men, or by visitors from a distance. Our Editor has given a very successful series of lectures and demonstrations at the following places:—Brighouse, Huddersfield (repeated by request), Southport, Edinburgh, Sunderland, Leicester, Crewe, Stockport, Louth, Ipswich, and Dewsbury. In addition to these he has also lectured four times in London on the same subject.

At Southport and at Sunderland successful radiograms for surgical purposes were undertaken, and we reproduce some of the results. On another occasion, with conditions apparently exactly the same, the results were very unsuccessful, and we mention this because many beginners have been disheartened at their own want of success. So far as we know, every worker up to the present has had many quite inexplicable failures, a fact which should only increase our anxiety to pursue the subject until the causes of failure have been removed. There is ample work for photographers as well as electricians and surgeons.

Anti-Vivisection are challenging the statement that the X-rays will decrease the amount of vivisection. We have received a long letter on the subject from Ernest Bell. We object as strongly as anyone can to the infliction of unnecessary pain, but we doubt the accuracy of Mr. Bell's conclusions and certainly some of his information with regard to the exposure necessary for radiography is far from being up-to-date.

Experiments as to distance.—There seems to be a difference of opinion as to the effect of placing the photographic plate at a distance from the radiant matter tube. With a view to assisting in settling this matter, the following experiments were undertaken. The tube used was Cossor's oblate spheroid, with the point terminal at the top and the disc at the side. The lower point terminal was unconnected. The plates were quarter-plate, Imperial Plate Co. The subject was a small leather purse surrounded by metal, with an inner pocket, in which was a sixpenny piece. The time was two minutes, and eight plates were exposed at the following distances from the bottom of the bulb of the tube—2, 4, 6, 8, 10, 12, 14, and 16 inches.

The first four were developed in the same dish at the same time, and came up in from one to two minutes, exactly in the order of distance. The last four were developed together, and came up in from two to three minutes, also in the order of distance. The same time, ten minutes, was given to the development of all eight, and the first four were put into the hypo together and taken out together, the last four being similarly treated. Thus, except in the matter of distance, the conditions were as far as possible identical.

No. 2, at a distance of four inches, is correctly exposed, No. 1 being too dense. All the rest are under-exposed in proportion to their distance. The definition of the coin within the purse improves as distance increases. The experiments show that these rays do not vary, as light does, inversely as the square of the distance. To say that they vary inversely as the distance seems

nearer the mark. The photographic effect seems to vary even less, but we know that a plate exposed ten seconds is not twice as opaque as one exposed five. In order to test the opacity more exactly, the negatives were examined in a dark room with Warnerke's sensitometer. The light used was an ordinary gas-burner, about 7ft. from the eye of the observer. The sensitometer was covered first with two thicknesses and afterwards with one thickness of tissue paper. A ninth negative was exposed, like No. 5, at a distance of ten inches, for three minutes. This also was compared, but the comparison was not so exact as the other eight, for the dynamo was worked by a different operator, and the plate was from another box, though of the same make. The background of the plate was first examined, and afterwards the coin.

The result is as follows:—Let A be the negative number, B the sensitometer number for the background with two thicknesses of paper, C the sensitometer number for the background with one thickness of paper, and D the sensitometer number for the coin.

A	B	C	D	
1 ..	10 ..	11 ..	15 ..	2" distant.
2 ..	(11 or 12) ..	(13 or 14) ..	17 ..	4" "
3 ..	13 ..	16 ..	17 ..	6" "
4 ..	14 ..	17 ..	17 ..	8" "
5 ..	14 ..	17 ..	17 ..	10" "
6 ..	(14 or 15) ..	17 ..	17 ..	12" "
7 ..	15 ..	18 ..	17 ..	14" "
8 ..	15 ..	19 ..	17 ..	16" "
9 ..	14 ..	17 ..	17 ..	10" "

No. 9 had three minutes' exposure, and all the rest two minutes. As far as appearance goes, No. 9 appears to be slightly darker than No. 4, and not so dark as No. 3, but its definition is far better than either of these. In considering definition, the coin within the purse was the part looked at. This would seem to point to the opinion that the light varies inversely as the distance of the plate from the tube, and that No. 9, to be correctly exposed as No. 2 was, should have had five minutes. This set of experiments was made before the focus tube could be obtained, so the length of exposure does not in any way reflect on the tube used, which was among the best in the market at that time.

EMMA GIFFORD.

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THE PHOTOGRAM

Vol. III.

JUNE,, 1896.

No. 30.

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Painters' Studies for Photographers.

No. I.



Neg. and Design by Hans Bayer.

COMPARATIVELY few photographers realise the extent to which painters find it necessary to study the human figure, whether nude, draped, or costumed. They know little of the extent to which the life schools are patronised, or of the amount of instruction and practice taken by the artist of the brush before he considers himself properly equipped for his work. There are many important schools, in London and other cities, where the student carefully studies posing and lighting under the guidance of qualified teachers, with the assistance of trained models. And if all this study is necessary to a painter, whose sitters give him ample time, and whose models are selected figures, how much more is it needed by the photographer, whose posing and lighting must be hurriedly completed; and whose sitters are of all classes, often most unsuitable material for picture-making.

Some study after the painters should be valuable to the professional photographer, and to the student of genre and figure work; but most of all to that coming class of photographic illustrators, whose original work is already beginning to take the place of brush-work in some of our popular illustrated journals.

The painters' studies that we shall reproduce are specially made for us, and they will be of the greater importance because they will represent some of the best-known professional models, posed by artists, in costumes and poses chosen for painting from, and not arranged for our purposes.

They will be photographed by Charles W. Gamble,

but the whole of the arrangement will be in the painters' hands. The studies will be made in some of the leading schools of painting, and will usually be accompanied by a few comments from the artist or one of the instructors of the school. The general arrangements are in the hands of Mr. J. McNab, a well-known professional model, who is the sitter in the first study.

We have been highly gratified at the interest taken in this series of studies and the assistance given by the various gentlemen who have been approached, and there is only one cause of dissatisfaction, viz.: that one or two well-known artists who are willing to arrange studies for us, are unwilling to permit their names to transpire. None the less our thanks are heartily tendered to them.

Our treatment of the subject may well be introduced by the following extract from the *Supplement to the Publishers' Circular*, for April 18th. It shows how a man whose business is to know the signs of the times in journalism, looks to the future of photography in illustration.

"There still remains something to be said on the subject of art and photography in connection with newspaper and magazine illustrations. To place any ordinary, inartistic photographer in the place of a trained artist, substituting for the imaginative and picturesque the commonplace, unpicturesque, mechanically made photographs, is to degrade the art of illustrating to its lowest level. It is utterly impossible, for instance, with the assistance of ordinary models, to pose living figures satisfactorily in the representation of incidents requiring the expression of passion, or the more impressive actions and impulses dealt with in a tale or novel. Yet this practice is becoming more and more common in the illustrating of our magazines and periodicals, as well as books.

"There are now before the writer some childishly ridiculous specimens of these story photographs, or photograms, as they should really be called. In one the figures are arranged with considerable effect, but they are associated with painted accessories no better than the worst we have seen in a penny stage booth at a country fair. On the other hand, we see no reason why photographic views, landscapes generally, and architectural subjects, street scenes and news incidents of actual occurrence, taken on the spot, together with similar subjects, should not come well within the province of the illustrating photographer. But

training in the drawing schools; and we do not pretend for a moment that the studies we can give will replace such training. They may, however, prove useful fields for thought; and they will be most valuable to any worker in portraiture who will attempt to reproduce their spirit and feeling, not by a slavish imitation, but by a different version of the theme, adapted to his own sitters and surroundings.

As in all other cases when introducing new features into the magazine, we are anxious to have the suggestions of our readers, so that the work may be made generally useful.



HEATHERLEY'S SCHOOL.

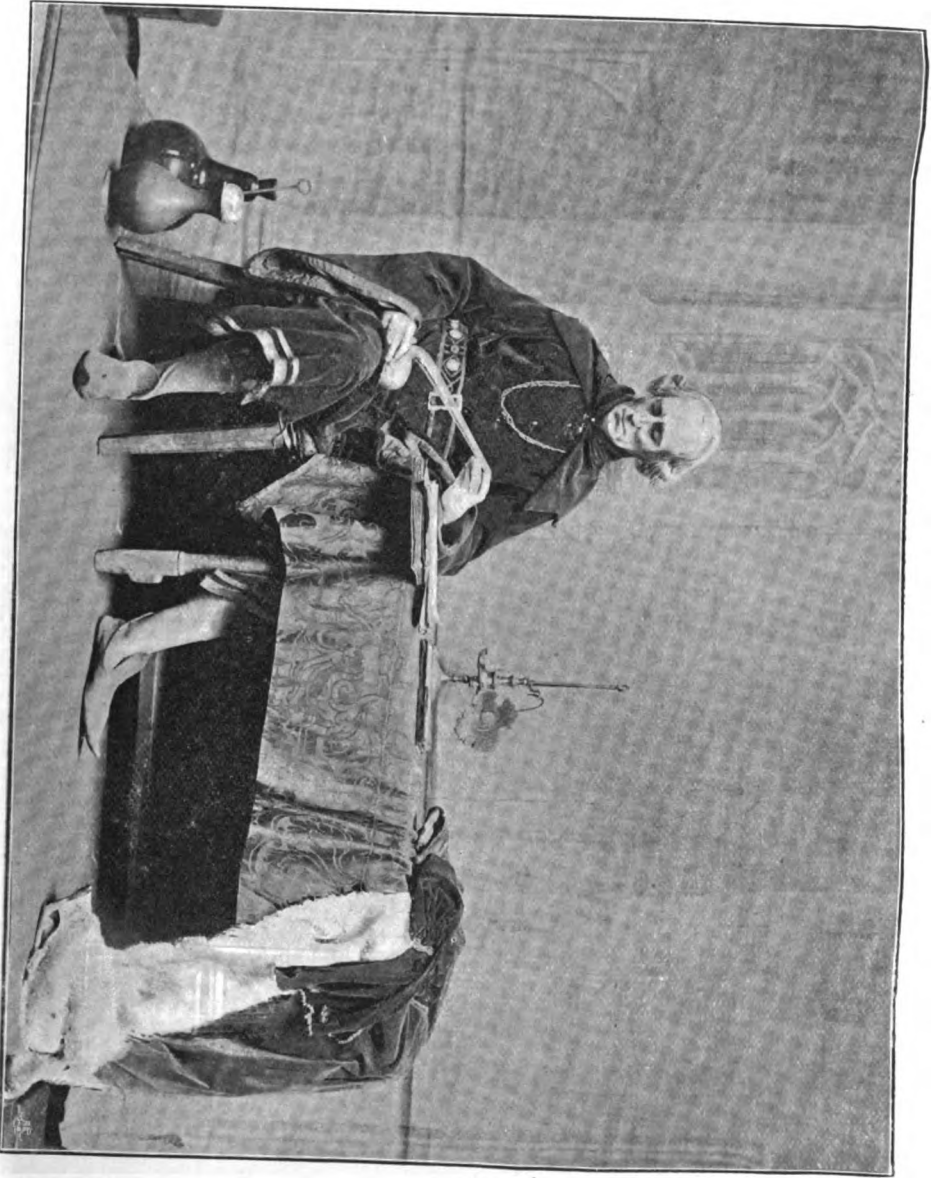
even here special training and knowledge are required.

"The photographers employed on work of this kind should have some practical experience of printing technique, as well as a fair share of artistic taste and feeling—rare faculties, yet many of the wood and copper engravers possessed them, and more. In a landscape the prevailing sentiment should be caught as well as the actual forms, and this never can be if the operator regards his subject with no more thought or feeling than his lens has. We want, in short, a new class of photographers for such work."

The "new class of photographers" here demanded can only be formed from men with natural taste and ability, improved by careful

Of the many schools of painting, none has an older and more honorable record than "Heatherley's," in Newman-street, where many of the best-known artists have learned so much as is learnable of their craft. We need but mention the names of E. Long, R.A.; F. Holl, R.A.; P. H. Calderon, R.A.; A. Gilbert, R.A.; A. C. Gow, R.A.; H. Stacey Marks, R.A.; F. Walker, A.R.A.; W. L. Wyllie, A.R.A.; Sir J. D. Linton, P.R.I.; and G. Pinwell, R.W.S., from a list of some hundreds, to prove this statement. At this school our first studies were made, and, perhaps, a few words from Mr. J. Crompton, the director of the school, may interest photographers.

In approaching the subject we mentioned the statement made by Frank M. Sutcliffe, at the



THE ALCHEMIST.

Study by Mr. Crompton. Negative by Chas. W. Gamble.
Sitter, J. McNab.

Camera Club conference, that there were only four portrait photographers in Britain who could fairly be called artists.* Mr. Crompton agreed as to the scarcity of artistic ability amongst photographers, and attributed it to commercial conditions and lack of training, rather than to want of natural ability. The painter, he said, however gifted by nature, must go through serious study, and even drudgery, before he can be master of his craft—and so must a photographer. He who would become a *master* in portraiture must study seriously, working from the human figure, both nude and draped. And, though he may never intend to use pencil or brush, he must study by drawing, because only by such means can he cultivate the power of observation. And he must study selected models—the ordinary run of a photographer's work gives him little opportunity for self-improvement.

In choosing models for painting (when the object is study and self-improvement), preference is given to those with fairly tall figures, well knit, and easy and graceful movement. Those who tend to a spare habit—rather than stoutness—are preferred as giving the anatomy and play of the muscles; and often more than one model will sit for a given subject.

Costume, color, backgrounds and accessories, are specially studied at Heatherleys, where there is a wardrobe of over a thousand complete and different costumes, as well as great wealth of backgrounds, furniture, &c. This gives scope for ample variety in the massing of color—or, as photographers must regard it, light and shade.

The effects of various lighting are most important—photographers keep to too small a range—and it is specially necessary to study the effect in the rendering of the same subject under artificial light, diffused studio light, strong studio light, and open out-door sunlight. The painter takes a

greater range than the photographer, although there would be excuse for the painter if the reverse were the case, because change of lighting presents much greater difficulties to the painter than to the photographer, whose drawing is done by the camera.

We asked Mr. Crompton what course he would recommend to a photographer who wished to become an artist in his profession. The same as to any other student, he replied—*work*. There are many would-be painters who come to the school and wish to be “finished” without going through the drudgery. One can never make a craftsman out of a *dilettanti* amateur who will not labor. The photographer who would be a real portrait artist should begin early, and must go through the whole course—freehand, model, and charcoal drawing, up to the anatomy and the complete figure. He should even study color very thoroughly, for a knowledge of color is necessary to its perfect interpretation in tone. Books are no good. The student must work under a master or critic. Give him a study, a definite work, and when it is done point out its strength and its weakness.

But suppose a man is already in business? Still he must be prepared to work. Let him take a year's study on the head and bust, drawing life size or larger, and paying special attention to tone values. A little study should also be given to the hand and arm. Mind! this is not good enough to replace a full course, but only when it is desired to make the best of limited time.

And what do you think about photography and art? There can be no doubt that photography is capable of being the vehicle of much artistic expression, and if photographers are not artists the fault is in the men and their circumstances rather than in their tools. A great number of our students are amateur photographers, and though their work may be poor, technically, there is no comparison, artistically, between it and what is generally produced by photographers.

* W. Crooke, J. Craig Annan, H. H. Hay Cameron, and Fredk. Hollyer.



Negative and Design by Hans Bayer.

*Constructive Criticism.**No. X.—Criticism by Outsiders.*

BY GLEESON WHITE.

AN expert in any craft is apt to resent criticism by outsiders. Or, it might be more true to say that he is apt to be indignant if the criticism takes the form of pointing out shortcomings in his work. For human nature is fallible, and we are all apt to take praise, even if undiluted and in large doses, as merely well-merited appreciation. Especially is censure, however mild, resented when certain abstract qualities are in question. If you tell a man that the chair he has made does not stand firmly on its four legs, the truth or falsity of the accusation can be proved easily enough. But if you say that some work of art he has produced lacks poetry, or is unbeautiful, or that it is unlike nature, it is likely that he will protest against the opinion of a person who does not paint being set against the work of a trained artist.

Theoretically, this attitude is admirable—that no one should presume to find fault unless he himself can make a perfect thing, be it picture, poem, or pig-sty, in place of the one he considers imperfect. Such a naïve solution of intricate human intercourses goes on all fours with the noble intention to speak the simple unvarnished truth on every occasion. Yet the man who refuses to employ the ordinary courtesies of life, or the one who tells his friend exactly what he thinks of him may be candid, but the world would soon find him unbearable. For we all pass most of our spare time in criticising, without technical study of the subject.

People who know nothing of politics do not think it unreasonable to criticise the action of statesmen fully informed on the matter, so the man who could not boil an egg if left to himself will criticise the dishes of his cook. There is a homely proverb that the proof of the pudding is in the eating, and arguing from this standpoint we are forced to admit that tea-tasters may be excellent judges of tea, although they could not prepare a single leaf if they were asked to cultivate the shrub itself. It is possible that by dint of study of masterpieces of the past, by intercourse with painters and frequent visits to studios, and by the knowledge of books, such as Sir Joshua Reynold's lectures, and Mr. Ruskin's "Modern Painters," or Mr. Stevenson's "Art of Velasquez," that a person who does not make painting the business of life shall yet be competent to pass judgment in the efforts of others. There are certain laws of composition, and many other qualities of the conventional interpretation of nature into pictures, which are accepted by all the western world. Above, all nature is available to everyone, no man can claim to have any secret acquaintance with her which is not open to all his fellows. We can all observe the effects of day and night, the same sky is always about us, the same beauties are open to all who care to see them. Very few people look at any object simply and without prejudice. Our ideas are all distorted by what other men have set down as faithful

presentation of natural effects. It may be that we are so ignorant of the startling effects of juxtaposition of color that we think a tree is always green. Yet if you experiment for half an hour with a few bright-hued wafers and a few pieces of colored fabric, you may prove to yourself that color is almost entirely a question of its surroundings. Put a scarlet wafer on a piece of black silk, and the black silk looks a rusty brown; but put the same wafer on a dark blue silk, and you would be willing to swear it was black. So in other questions of eyesight. The man in the street says he believes what he sees—the scientist merely believes his impression, and is quite prepared to find that more study will reveal the fallacy of that impression.

Therefore, if one who has not any experience worth recording as a photographer, is asked to discuss photograms as pictures, one sees no reason why he should refrain, nor why his judgment should be valueless; nor, on the other hand, is his criticism likely to be final, or infallible. The most honest critic will blunder often enough, and fail to please anybody; even himself. Indeed, the more anxious he is to be just, the less likely it is that he will please friends or foes. But to attack his verdict merely on the grounds that he could not do better work himself may be sheer folly. The result, whatever it be—painting or photogram—if publicly exhibited, must needs run the gauntlet of public opinion. It may happen that all the critics are wrong and the photographer is right; that is not at all improbable. Or it may be that the debateable point is one that has escaped the attention of the photographer, and is one that has been the result of much study on the part of his critic.

It is curious to see, apart from art-criticism altogether, how deep-rooted is the English belief in the value of the opinions of outsiders. Our honor and life itself may at any moment be placed at the mercy of twelve men in a box—which, called a British jury, straightway becomes not merely a critic, but the final arbiter of your destiny. Few, if any, of the Lords of the Admiralty could manage the smallest yacht. In all departments of official and civil life you will find the ignorant amateur called upon to decide the merits of various delicate problems which might well stagger the most profound expert. So that on the face of it we see the custom of centuries favors lay criticism.

So much may be urged in defence of outsiders, who rush in gaily, where wiser beings fear to tread. But this does not advance, however remotely, a claim for their infallibility. If, as may happen, one professionally engaged in writing upon art topics, is asked to record his impressions of photograms—for by virtue of old-established prejudices books of pictures are considered incomplete without a decent amount of type pages to set off their illustrations. When a critic adventures in such a way and records his opinions of a thousand (more or less) works, presumably of art, a few people

may be satisfied, and a few decidedly hostile, but the majority are unconcerned. The only important point is not to rate the opinion of the critic below, or above its true value. For if he is but an outsider, as soon as he approaches technical details he is sure to be caught tripping, while if he is an expert it is equally possible that he lacks sufficient breadth of view to appreciate work diametrically opposed to his ideal. Therefore, one need only rank outside criticism as useful in setting the artist on his defence. We all overlook most obvious faults until somebody more candid than polite points them out—then we all wonder how they escaped our notice. If, however, you adopt the attitude of attacking the critic on his own grounds, then he may have you at a disadvantage. If you argue that no lay-criticism should be permitted it will be hard to maintain the policy of abstention in ordinary life. It implies no more grumbling at income tax, no more indignation at late trains, no attempt to show that the Government does not know its own business; but silence on all subjects that you could not at a moment's notice manage much better yourself. And for proof that you could manage it, it is not sufficient to have a perfect belief in your power, you must show evidence of having formulated a tax, supervised a railway system, or controlled the foreign and domestic policy of an empire, which is absurd—yet such is the dilemma to which you are reduced if you stand by the fallacy that a critic must be silent unless he is a better expert than the criticised.

Does it much matter if we differ on the merits of a photographic transcript of nature? The

piquancy of life is based on surmounting certain obstacles, and to convince an adverse critic, so that he has to record a favourable verdict next time, is not a useless task. Does he revile what is indeed a masterpiece, he but proves his own incompetency. Possibly the critic and the criticised both attach undue importance to certain qualities, and so are each prejudiced unreasonably. Even the words employed: "tone," "value," "quality," and the rest, may convey different meanings to one familiar with picture painting and one conversant with photography alone.

We all quarrel on some points. We are either realists or romanticists. On the one hand, truth appears to us an undiluted transcript of actual facts, set down with the direct imitation of a reflection in a mirror; or else we hold the principle that selection is the final purpose of art—that it needs only the essential facts.

The most perfect technique will not suffice to make perfect art; the most perfect feeling and exquisitely sensitive perception is not art unless accompanied by adequate technique. If the one who photographs sets too high store by technique, so the one who does not may rank it too low. Yet if each discusses the matter calmly—or at all events honestly—good may accrue to both. No decent person writes in dispraise from a love of fault-finding, much less to pay off a private grudge by a public censure. Indeed, if he value his peace of mind, he says smooth things of all men, and is willing to suppress rather than to exaggerate the shortcomings as they appear to him in work which it is his duty—and always his pleasure as well—to not write about.

Printing in Clouds.

BY "TEINTE."

THIS comparatively simple operation is one which is much neglected by the generality of photographers, yet the presence of clouds in most out-door subjects is such a great improvement that it is surely worth while to take the necessary trouble. It does not necessarily follow that because the subject shows good clouds at the time we make the negative that we shall obtain them. If the subject does not show any very great contrast, and the exposure is short, we shall probably do so, but in most instances they will be lost for all practical purposes—sometimes entirely gone, through over-exposure. In other cases the sky is so dense that they fail to print through. When the paper under the sky part of the negative prints without a vestige of gradation, we should endeavor to supply it. If at the time we make the negative there are good clouds, it is advisable to give a separate exposure on another plate for these. The exposure, of course, varies with the conditions. Using the so-called "instantaneous plates" (say 100 H. & D.), and with the full aperture of a rapid symmetrical lens $f/8$, the time with a bright sky would not be more than $\frac{1}{125}$ second. Of course, as a rule a small stop would be used, in which case the time must be increased in the proper proportion. Then, in development, the

negative must be kept thin, or we shall lose gradation and the delicate tones.

Nothing is said here as to the use of cloud negatives taken at other times and seasons. That is more a question for the artist than for a technician. The beginner, however, at the work will do well to confine his efforts to using clouds taken at the same time as the particular negative, as his work will be easier, and though they may not be the most beautiful clouds, no one will be able to say that they are incorrect.

The method of procedure will depend upon the condition of the negative of the subject. If the sky remains white during the whole time of printing, no preparation is required. If, however, the sky portion of the subject tints ever so slightly, there will have to be some masking. Slight lack of density may be compensated for by fixing card or brown paper, cut roughly to the outline of the sky, on the printing frame during printing, letting the mask project slightly over the subject portion. This will answer as a rule, but should the sky be very thin, another method will have to be adopted. Carefully paint round the outline on the film side, using a fine brush. The best material for this is Gihon's opaque, as it works easily and a small quantity is enough. The substance is rather expensive, but instead, a little Indian red (to be

obtained in fine powder from an artists' colorman), mixed with white of egg as a medium, answers well and is cheap. Do not use gum, for the coating splits, and *don't* use black varnish.

Some people find a difficulty in blocking out in a straight line, and any jaggedness looks bad. It is perfectly easy, really. Use a draughtsman's ruling pen, first grinding the point semi-circular, as the ordinary point tears the film and is difficult to work with. By filling this with the color, and using a straight edge, any amount of work can be done quickly and accurately. The plan given is easy enough—though sometimes tedious—when the outline is reasonably regular, but when the outline is irregular, such as the case of a negative with foliage against the sky, the work is not so simple. We may stretch various thicknesses of waxed paper, or papier mineral (ordinary tissue is too uneven in texture) over the sky on the glass side, bringing the first sheet slightly over the subject, the next a little shorter, and so on until we have a series of steps. This gradating need not be carried further up than half an inch from the landscape, with a $\frac{1}{8}$ of an inch difference between each step. The edge of the last sheet, where it covers the top of the foliage, may be slightly serrated. On taking a print from the negative thus prepared, it will at once be seen if the masking is all right, and any addition or reduction of the paper can be made in a particular place. I do not advise the dabbing of color on the paper if a slight addition of density is required, as is sometimes done—it is apt to be patchy.

There is another method which is often recommended, and looks well on paper—that of coating the glass side with negative varnish, stained with an aniline dye, and then removing the varnish by scraping. It is practical, but tedious, and one could paint out a sky in much less time.

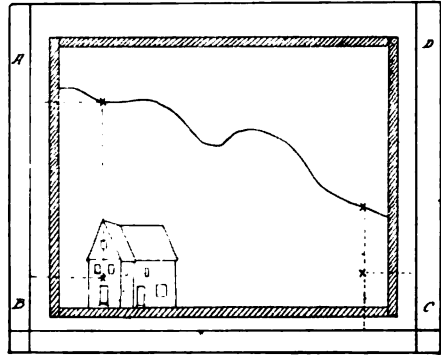
When the sky is quite masked, so as to be sufficiently opaque, the prints are made. We also treat the sky negative in the same way, painting out the subject or masking in the other way, so as to leave only the sky part.

When all the prints of the landscape are made, we start printing in the clouds. Remove the subject negative from the frame and take the cloud negative. Then take a print and adjust it under the sky negative, so that the masked portion just covers that already printed; then place in the frame, taking care that no shift occurs. To do this, the best way is to hold the negative, glass side up, in one hand, and then with the other bring one end of the print into position. Then fix the other end. It is very easy to move the print, and as the sky is very thin it can at once be seen when the print is in the proper position. The fixing should be done as quickly as possible, and the hands should have just previously been carefully wiped, otherwise the heat and moisture will cause the paper to expand, and registration will be very difficult, if not impossible. Not only this, but with long contact red stains (where the fingers have touched) will show in the print after toning. Rubbing the fingers with a *small* quantity of French chalk is an assistance. The clouds should be printed to the proper depth. Here only experience can guide.

If it be desired to print in platinum or carbon, a modification must be made. The work should

really commence at the time of making the negative, the object being to have the images in identical positions on the two plates. To get this, push each dry plate well up to one end of the rebate, and as there is sure to be some play, fix each with a small piece of adhesive paper. When exposing, take care the camera does not shift between the two exposures, and push the slide well home into the camera back. When the negatives are made they should be identical as regards position of the images.

Before blocking out, cut an opening, exactly the size of the negative, in a piece of card the same thickness as the plate, but one inch larger each way. Fix the negative in this opening, with lantern slide binding strips along the edge of the opening and the bare glass edge of the negative; then proceed to do the same with the sky negative. Then carefully measure from any two points (one



at each side) of the negative that can be seen in both subject and cloud negative, and make a mark from each on the card margin. Join these two points by a straight line; now do the same for each side of the negative. Repeat for the sky negative, making the same lines and from identical points. We shall then have lines *ABCD* on each cardboard edge, as in the figure. We cut our sensitive paper, which has to be larger than the negative, exactly to the size of the space between the points *AD* and *BC*, the bottom at right angles to the sides. The subject negative is placed in the frame, and the paper is adjusted so that it comes exactly to the guide marks, the two bottom corners coming close into the angle at *B* and *C*, and the print is made. It is then removed and placed to the same register marks on the cloud negative. As these marks are the same distance from the same points in both subject and cloud negatives, the sky should print in the exact position. If, by any error, the guide marks are not quite in the proper position, then very little trouble will set the matter right. If the cloud negative and subject negative are different, then the register marks must be made by trial.

As the progress of printing cannot be seen, the time should be ascertained by making a trial, using an actinometer, and then, after printing in the clouds, letting the actinometer run to the time found by the trial print to be correct. Many forms of actinometer are available, most of which can be made by the photographer himself. But there! "that is another story."

Beauty Spots.

No. III.—The Athens of the North.

BY HERBERT L. GARDINER.

No place in Britain is so full of concentrated historic interest, natural beauty of site, and association with the names of the illustrious dead, as the Scottish capital.

Within its narrow limits, confined by the walls on the one hand and the Nor'-Loch—(now Princes-street Gardens)—on the other; trusting for protection to its Acropolis, the castle rock, or to the sanctuary of the Holy Rood, the old city was forced to extend only upward instead of outward, and upon the sloping sides of the long ridge stretching from the Castle to the Abbey thus arose, at a very early date, tall grey-stone houses forming imposing and panoramic effects from many points of view.

When the Act of Union gave a sufficient feeling of security to allow of the extension of

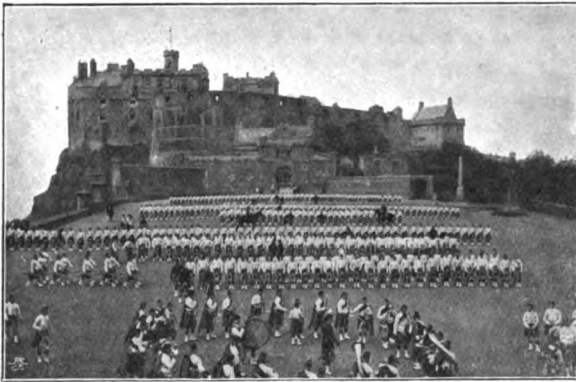
him to linger. Those who enjoy the switchback movement should choose the West-coast route, as, Carlisle once passed, a very good imitation is provided. The Waverley route is somewhat slower, but has the compensating advantage of passing Melrose, where you get out to visit its old Abbey, as well as Dryburgh Abbey and Abbotsford, the home of Sir Walter Scott, where is shown his large collection of historic relics.

THE PRINCIPAL HOTELS.—The Palace, The Royal, The Windsor, Clarendon, Waverley (Temperance), are all in Princes-street, between the two stations, N.B.Ry. and Caledonian. Others, like The Roxburgh, The Queen's and Cockburn are but a stone's throw away.

The first object of interest which strikes the eye of all visitors to Edinburgh emerging from their hotels is, of course, the Castle—"Like some veteran grey in arms"—perched upon the top of a cliff rising on three sides precipitously from the surrounding gardens. With the constant activity of the picturesquely clad garrison there is no lack of fine figure studies. For leave to photograph the buildings within the castle, "Queen Margaret's Chapel," Queen Mary's Room and the old Parliament Hall, lately restored, application must be made to the Commander of the Forces, office: 1 Castle-terrace; and should be made well in advance. Standing on the Half Moon Battery, Edinburgh lies unfolded before you, a magnificent panorama.

The photographic architect will note Inigo Jones' Heriot's Hospital to the south, with the Medical University and Infirmary beyond. The full stretch of Princes-street lies to the north, with the Bedford Hotel as a good specimen of Venetian, and the Conservative Club of chaste Renaissance design. The noble Padian pile of the Bank of Scotland is opposite, and the Scott Monument, which Ruskin describes as a Gothic steeple stuck in a garden, commands attention.

Below are adaptations of the Ionic and Doric styles, in the shape of two temple-like buildings: the National Gallery and the School of Art. Quite close at hand has recently arisen a large block of buildings called Ramsay Gardens, forming a little colony of professors, students, artists, and literary men, who, influenced principally by Prof. Geddes, are attempting to unite in their homes and lives the quaint interest of mediæval life, combined with the very latest of up-to-date ideas. The best view of these buildings is obtained by passing through a little passage from the Castle Esplanade to the inner quadrangle. This group of houses has incorporated the old house of Allan Ramsay, the author of "The Gentle Shepherd,"



THE BLACK WATCH, IN THE CASTLE YARD.

By J. Patrick.

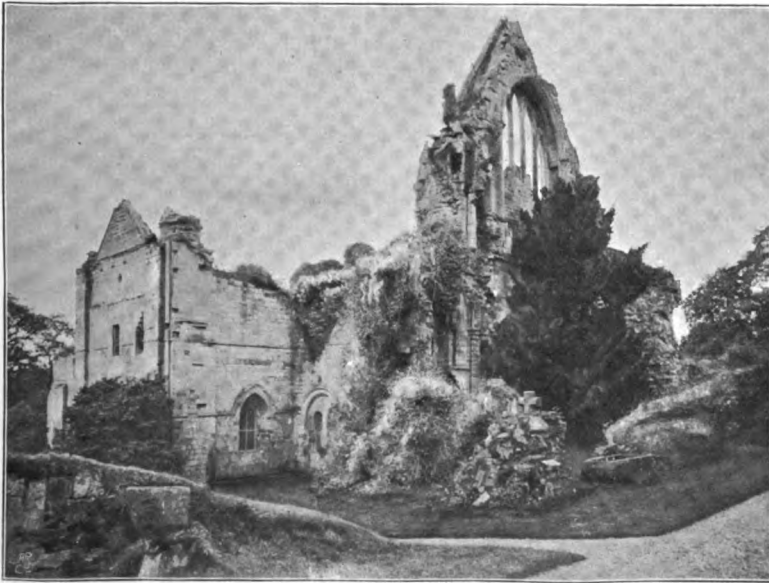
the town beyond the walls, the Nor'-Loch was bridged over and the new town sprung up, designed principally by, or under the classic influence of the brothers Adams. Most marked indeed is the contrast between the old and new city. The former prides itself on its broken outline of architecture and rock—the latter on the prim severity of its broad straight streets with intervening gardens, squares with statuary, and houses even approximating to the Grecian style, so that apart from its literary pre-eminence it might justly name itself "The Athens of the North."

Edinburgh has also been truly described as the most East-windy, West-Endy city in Britain. The latter title it has earned by a certain cold exclusiveness experienced at first by the uncredentialed "stranger within its gates," and the former characteristic must be borne in mind by all visitors before the beginning of June.

Reached from London in 8½ hours, the quickest route and the easiest is by the East-coast. The traveller will pass many cathedral towns tempting



LOCH ARD AND BEN LOMOND.
By C. A. Morgan. Second Prize Set.



DRYBURGH ABBEY.
By C. P. Cameron. First Prize Set.

which once was a principal object of interest looking in this direction from Princes-street. Passing down the Lawnmarket those with short



HAWTHORNDEN.

By Catharine Weed Ward.

focus lenses will find many quaint corners in the closes on either side of the road, although to a great extent these are being, or have been, improved out of picturesque existence. As these were once the town houses of the Scottish aristocracy, although now sadly fallen from their high estate, those brave enough to mount the dark and dirty stairs and crave an artist's perogative to pry after the beautiful, will find many fine specimens of hand-modelled plaster ceilings or carved fire-places, in rooms occupied by the very poor. Milne Court, Stairs Close, and Riddle's Close should be visited.

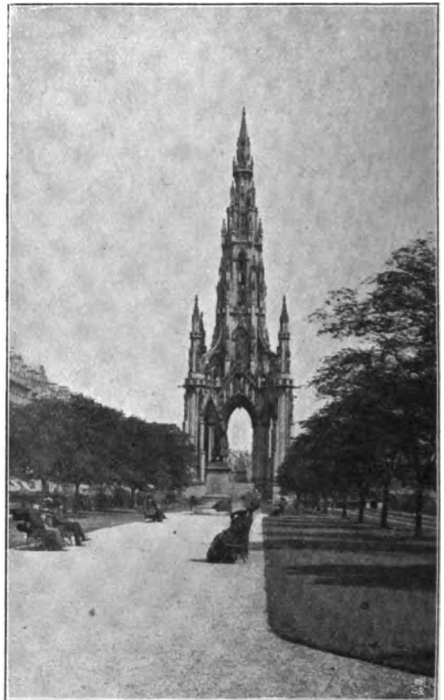
Turning along George IV. Bridge and passing the Library we come to Greyfriar's Churchyard. This graveyard is most unique, the tombstones, mostly seventeenth century, have a character quite of their own. The stone upon which, in letters of blood, was signed the Solemn League and Covenant, the Martyr's Tomb, and that of the Cruel Mackenzie (reputed to be haunted) are the spots mostly visited. The Old Kirk was burnt down and the present building is quite without interest.

Returning to the High-street, St. Giles, with its Lantern Tower is a good subject from several points of view. Those taking it from the east would include the Old City Cross restored by Mr. Gladstone. Continuing eastward, we arrive at Tron Church on the right and Cockburn-street on the left. A few steps down this street we come to a curious old market, much frequented by the poor people. It is built in three tiers or rather terraces upon the side of a ridge sloping down to the railway, and has altogether a very curious arrangement.

Proceeding on along the High-street, a snapshot should be taken of Allan Ramsay's Old

House, where he started perhaps the first lending library, and then we come to John Knox's house, an old half-timbered dwelling with many old-fashioned points of interest, both inside and out. The Canongate, Tolbooth, the Duke of Argyle's house are full of interest. From the projecting balcony of the last-named the Duke's son and his wedding party jeered at their fallen enemy Montrose, who was dragged by on a hurdle to execution. Little did the young Argyle foresee then that the time would come when he should be dragged the same way to a similar fate. Next notice Whitehorse Close, restored now, but associated with Dr. Johnson's visit. Here was it that Boswell went to meet him, and found the burly doctor swearing like a trooper at the accommodation. A few yards more and we reach the Royal Palace of Holyrood with its ruined chapel. Except for a brief fortnight at the end of May, when the Commissioner holds Court here on behalf of the Queen, it is now no longer the abode of royalty.

For permission to photograph here apply to the office of Her Majesty's Board of Works, George-street, Edinburgh. The curious old fountain before the principal entrance, and the Abbey and Royal Bathhouse should be recorded. Entering the Queen's Park, Salisbury Craigs and Arthur's Seat form a change of subject, especially beautiful



BURNS MONUMENT.

By John Beeby. (Honorable mention.)

when the east wind first blows up a little sea mist.

Returning by Abbey Hill, we reach the second principal point of vantage in Edinburgh, the

Calton Hill. Fine views are to be taken all round this hill. The old observatory, the large standing columns of a monument begun, but never finished, and the Burns monument are points of interest. A curious view of Edinburgh by night might be taken from here, a short exposure with the last light of the day to give a slight general detail, and then a long exposure when the electric globes along Princes-street, etc. are alight.

Of the places of interest within a short distance of Edinburgh may be mentioned:—

DUDDINGSTON, one and a half miles from Waverley Station. Views of the loch, Arthur's Seat and Craigmillar Castle.

ROSLIN, eight miles by coach from Post Office or train from Waverley. The chapel here is a very dictionary of decorated Gothic detail, the 'Prentice Pillar being famous. The glen to Hawthornden and the ruined castle are favourite haunts of tourists.

MUSSELBOROUGH, five miles from Waverley, fishing town, Pinkie House, and golf links.

LEITH, the seaport of Edinburgh, contains, as all seaports do, many snapshot subjects.

NEWHAVEN, one and a half miles, a fishing village where the dress of the women with their short linsey-woolsey petticoats and neat shoes, creels, etc. is a character subject which will be popular to all with a hankering after picturesque and non-ordinary costume.

CRAMOND BRIG, five miles, is the most photographed spot around Edinburgh. The old church, the ferry across to Lord Rosebery's grounds, the two old bridges, and Jock Howieson's lodge, are all well known.

QUEENSFERRY, eight miles by coach from Post Office or train from Waverley. The dominant feature here is, of course, the world-famous Forth Bridge. As to whether it is of æsthetic as well as engineering interest is a debatable point. The old Priory Church is worth a visit, and a mile

away is the village of Dalmeny, where there is a very fine example of a Norman church.

COLINGTON, three miles, is a pretty village, and Swanston, at the foot of the Pentland Hills, two miles beyond, has been very beautifully illustrated by John Patrick, Comiston-road, Edinburgh, whose excellent series of views was placed at the disposal of the writer.

LINLITHGOW, sixteen miles, is well worthy of a visit. Its ancient royal palace and stronghold is a noble ruined pile. It is noticeable as being the birthplace of Mary, Queen of Scots, and here the Regent Murray was brought to die, after being shot while riding through the streets. The room in which he breathed his last is a dark dungeon-like chamber to the right of the entrance. A good view of the pile might be taken from a boat on the loch.

The editors gave me permission to wander fifty miles away from Edinburgh, but such a radius contains not less than fifty "Beauty Spots," each one of which would well occupy a much larger space than is at my disposal.

I need only say that Edinburgh is quite a centre of photographic activity, and that any photographic enthusiast visiting the city will meet with every possible assistance. There are many world-famed professional photographers, W. Crooke, Marshall Wane, John Moffatt, and others, and the Society is very strong, with rooms constantly open at 38 Castle-street. The dealers are numerous and well supplied—the names of Hume, Baird and Lizars will at once occur to tourists, and there are many others conveniently situated. Even in photo-mechanical work Edinburgh is well equipped, with four or five good houses, the best known of which is M. and T. Scott; while in photo-ceramics the name of J. S. Tunny and Co. is known everywhere.

Those who would like to read up more about the historic and antiquarian interest of this famous city should get Cassell's "Old and New Edinburgh," but smaller guides can be bought at any stationers.

Photo-Sculpture, and a New Application of the "X"-Rays.

BY COUNT VITTORIO TURATI, of Milan.

ONE of the oldest methods of photo-sculpture was that of de Marynhac, of Paris (1867), in which twenty-four cameras were arranged in a circle round the object and twenty-four negatives taken, and the prints from these were traced by means of a pantograph on to the block of marble. Somewhat similar processes were used by Benque, of Trieste, and also by Pötschke, in 1892; and a similar process was patented in 1893 by Dr. W. Reissig, of Munich.

Barath, in 1867, first tried to make photo-sculptures by printing on bichromated gelatine. He used ordinary photographic negatives, and was satisfied with the false rendering of the relief which he obtained. It is easy to see that correct relief could not be obtained by means of ordinary photography; the shadows of the original would

be strongly toned, and would thus be deep, whilst on the other hand the lights of the original would be swollen up out of all proportion.

Montagna, in 1872, recognised the principal fault of this process, and published a method of making suitable negatives for the chromated gelatine printing process. This permits of the preparation of a photo-plastic negative in a purely mechanical way, without special arrangement of the model, and can be done as follows:—

If one wishes to reproduce, for example, a medal of about ten cm. diameter reduced to two cm., with all its details, it should be lightly rubbed over with oil, surrounded with a metal ring, which should be at least as high as the highest part of the relief, and then flow over it solution of gelatine, moderately colored with Indian ink (fig. 1). As soon as the gelatine has

set, the mould should be taken away; it will show all details by reflected light, by transmitted light the parts of the medal in relief will appear more or less transparent, the deep parts, on the other hand, opaque. The light gradations of this matrix correspond to the heights of the various parts of



FIG. 1.

the medal. If this impression is set up and photographed, a negative will be obtained in which the brightest parts will exactly correspond to the deepest, and the darkest parts to the highest relief of the original; the half-tones corresponding to the intermediate reliefs. In working this process several difficulties will be met with. If the gelatine matrix is very transparent, the rays of light passing through it will suffer numerous refractions, and destroy the character of the negative. By delicate emulsification of the gelatine this can be avoided to some extent, but troublesome reflections from the inside of the matrix will be difficult to avoid.

To completely avoid these troublesome reflections, the hollow places of the matrix should be filled up with a transparent or suitably colored medium of the same refractive index as the gelatine. The best is to pour into the cold matrix an equal percentage solution of gelatine, as cold as possible, and thus obtain a plane parallel system which will be absolutely free from any disturbing influences, and from this one can photograph without difficulty an absolutely correct photo-plastic negative (fig. 2).

The correct color of the matrix and the filling material are of considerable influence on the result.

Schubert has patented a process which enables photo-plastic negatives to be obtained without fault. In this the model, or a plaster cast, is covered in a suitable way with a colored liquid, through which it is photographed. Obviously, the lighting must be very even, and the model itself bright colored, if unpleasant troubles through shadows are not to be met with.

From the photo-plastic negative, prints on bichromated gelatine should be made. The chromated gelatine should be poured on to the negative, and the relief washed away with hot water. In this way deep moulds would be formed, which could be used for direct galvano-plastic moulding.

It would be more convenient to take first a plaster cast, and from this a mould in wax, stearine, &c., and thus obtain the direct mould for galvano-plastic duplication. On the other hand, the chromated gelatine could be spread on glass or metal plates, and printed under the negative. In this way a correct gelatine relief would be obtained by swelling. A good formula for a suitable bichromated gelatine is—

Soft gelatine	..	..	10 parts.
Water	..	..	100 ..
Ammonium bichromate	..	3	..

The solution should be filtered, coated thick and allowed to set, and dried in a cool, dark place.

[The preceding notes are abstracted from an article by Count Turati in the March issue of the "*Photographische Mittheilungen*," and he has kindly sent us a continuation of the article, which we append.—THE EDITOR.]

The negatives prepared by the above described method have, to some extent, the appearance and character of Röntgen positives, which gave the author the idea of a new and not uninteresting application of the X-ray photograms.

It is possible by means of the X-rays to prepare a photo-plastic negative by photographing through the model itself instead of through a transparent cast. The X-rays will, as is well known, penetrate through metals more or less, according to the greater or less density and thickness of the same. It is only necessary to place the medal or bas-relief on a gelatino-bromide plate, and to photograph it by the new light; a negative will then be obtained in which the opaque parts will represent the deep parts, and the transparent places the parts in relief.

It is obviously necessary, if a medal is to be used, or a plaster cast of it, that it should be cut in half horizontally, so as not to obtain two different photo-plastic images, the back and the front, on the same plate.

Similarly, from positive Röntgen transparencies, by simply printing on bichromated gelatine and allowing it to swell in cold water, true photo-plastic reproductions, suitable for galvanic reproduction, can be obtained; for instance, of the skeleton of the hand, which would increase the



FIG. 2.

wonderful effect of these pictures. For diseases and deformities of the bones, through "fracture, etc., a new assistant for surgery would be given.

It is clear that such reliefs, although only bas-reliefs, could be produced sharper and better if it were possible to refract the X-rays—a very important question, difficult to solve, about which Prof. Röntgen himself has expressed great doubt.¹

¹ Quite lately radiography has come into more practical use, and the problem, if not actually of refraction, still, the reflection of these rays, has been accomplished; Prof. Murani having stated this at a public lecture.

Practical Emulsion Making.

No. II.—Gelatino-Chloride Paper.

BY R. CHILD BAYLEY.

IN a former article (*Photogram*, vol. iii, p. 84) I dealt with bromide paper, as following on in easy succession the manufacture of an emulsion for negative work. In this one, gelatino-chloride paper will be described, the emulsion for which differs very widely from those previously considered.

In gelatino-bromide emulsions both for negative work and for positive prints on paper, we have silver bromide, an insoluble salt, freed by washing from the soluble products of double decomposition, and suspended in gelatine. In gelatino-chloride emulsions for printing out, the circumstances are very different, since it is necessary not only to have silver chloride suspended in the gelatine, but a soluble silver salt must also be present. It is obvious from this that the emulsion must be made in a different way, or the soluble silver salt would be lost in the process of washing. There are two ways by which this loss can be prevented, one partially doing so, the other entirely obviating it; and both of these methods I propose to describe.

The soluble silver salt generally employed is the citrate, and is formed by reacting on silver nitrate with an alkaline citrate, just in the same way as silver bromide is formed with an alkaline bromide.

The formula which has proved most successful in my hands, is on the lines of one published by W. M. Ashman, and is prepared as follows:—A solution (a) is made of 77 grains of citric acid in seven drams of water, strong ammonia is added to this solution until it only just reddens blue litmus paper. This will be best done by taking about six drams of the solution and adding ammonia (a very few drops will suffice) until red litmus paper is just turned blue, and then adding the rest of the citric acid solution. Twenty-five grains of ammonium chloride are next dissolved in four ounces of water, and in this solution three hundred grains of Nelson's No. 1 gelatine are allowed to soak until quite soft (b). Two solutions of silver nitrate will be required, one (c) composed of 77 grains dissolved in one-and-a-half ounces of water, the other (d) is made by dissolving 162 grains of silver nitrate in four ounces of water.

The emulsion is then made by heating b up to 150° F. until the gelatine is quite dissolved, when it may be strained through a thickness of nainsook into a jar. With constant stirring the silver solution c is added to this in a fine stream; the temperature of the solutions when mixed should not be more than 110°. After thoroughly mixing these two, the citrate solution a, previously warmed to 110°, also may be added and well stirred in, the second solution of silver nitrate, d being added last, at the same temperature as the rest. The emulsion must now be put aside in a cool place to set, and when this has taken place may be cut up by being squeezed through mosquito netting into a basin of water. In this water the shreds of emulsion should be allowed to remain

ten minutes, after which the pieces of jelly may be caught up by pouring the contents of the basin through the netting, and any washing water adhering removed by pouring a pint of water through the netting to finish with. It must not be washed further than just described, or the bulk of the silver citrate will be lost.

By this means most of the ammonium nitrate formed by the decomposition of both the ammonium citrate and ammonium chloride with silver nitrate will be removed, but with it much of the silver citrate will also be lost, and the mode is an extravagant one. A much more elegant method consists of the following:—

Solutions b and c are mixed as described and allowed to set. The emulsion so made may be cut up and thoroughly washed in water exactly as described for gelatino-bromide emulsion, after which it may be drained and remelted. When at a temperature of 120° F., the ammonium citrate solution is added, and after well stirring, the second silver solution (d) is poured in a little at a time, when the emulsion may be considered as finished and ready to coat. In this way it can be made without the loss of silver which follows the first described method, but the emulsion made in the latter way seems hardly so satisfactory. This is only to be expected, since it contains the decomposition product, ammonium nitrate, resulting from the formation of silver citrate. In fact, a really satisfactory gelatino-chloride emulsion has yet to be published. The writer has made a number of experiments with a view to the improvement of the above-mentioned formulæ, but the results of these are not yet in a condition for publication.

The emulsion, by whichever method made, should now be in the form of an opalescent, but by no means creamy, solution; in which condition it is ready to be filtered and applied to the paper. It can best be filtered by straining through two or three thicknesses of nainsook, before doing which one ounce of alcohol should be added for every ten ounces of emulsion; the alcohol may contain a little thymol if preferred, but this can hardly be considered necessary, as the emulsion should on no account be kept, but coated as soon as made.

As regards the coating, nothing remains to be said over and above the instructions given for bromide paper, the operations in the two cases being identical. The temperature should be 85° F., and this must not be exceeded; in fact, these gelatino-chloride-citrate emulsions are ruined by a temperature which might have little or no effect on a gelatino-bromide emulsion, beyond slightly increasing its speed. The paper selected for coating is a matter of importance. Many papers, otherwise perfectly suitable, contain metallic particles which, quite invisible in the paper at first, betray their presence by forming black specks as soon as the emulsion is applied. In bad cases, each speck is the centre of radiating lines, each spot looking like a spider with legs more or less numerous than usual. Rives' paper

may be employed, and I, myself, have found a baryta-faced paper, manufactured for collotype work, I believe, and sold by Penrose & Co. (and doubtless by other firms in a similar line of business), to yield very good results. The worst of this particular kind of baryta-faced paper is, that it is evidently not made with a view to being wetted, and consequently it needs very careful handling in the toning and fixing baths. Auto-type double transfer paper is not open to the same objection, but is, if anything, not quite so white on the surface.

There are few remarks necessary on the general manipulations required. Cleanliness is as important, if not more so (but this is impossible), as with gelatino-bromide. A much brighter light can be used for the different operations, one thickness of golden fabric being plenty of screen for gas-light, and two for daylight. The emulsion should be kept off the hands as much as possible during the operations, since it rapidly blackens them, and immediately after use the various vessels employed should be cleaned in hot water.

Camera versus "Comps."

THOSE who remember our articles under this heading in September and December, 1894, will be interested in the particulars of the improvements upon the idea made and patented by a professional photographer. The idea was by no means new in 1894, but we believe that no one has worked it out so carefully and perfectly as Friese Greene, whose patent, No. 7099 of 1895, describes a most ingenious adaptation of the process.

As now described, there is a possibility that the work may practically and seriously compete with

caused to pass very quickly but intermittently through a printing machine, a print being produced therefrom after every intermittent movement. Mr. Greene states that "this manner of using the negatives does not, however, form part of my present invention"; but it is in connection with this suggestion that the value of the machine is most obvious. The method of photographic printing, described and illustrated in our issue of October last, is sufficiently perfect to promise still further results with slight modifications; and we can easily imagine that in the future our highest-class magazines may be printed entirely by photography,—pictures and text at one operation.

It will be necessary to obtain a paper with fine surface, but not too stiff, and arrange for it to be printed on both sides. Then the folding and stitching into covers would complete a true magazine *de Luxe*. It would be easy to reproduce photographic originals, authors' MS., sketches, diagrams, etc., from any source whatever, without even the aid of the photo-mechanical worker, and with greater accuracy than even fine collotype can give. If once such machines are perfected for magazine printing, what is to prevent their adoption for fine jobbing work, enabling the fully-equipped machine photographer to supply copies of architects' and engineers' drawings, fine circulars and price lists, and a host of minor matters in menus, programmes, etc., etc., in style and price with which neither letterpress nor lithographic printer can compete?

The great difficulty that has stood in the way of "Camera versus 'Comp.'" suggestions has been that of "justifying" or spacing out the line of type so that the end letters come level all down the column. This difficulty is most ingeniously and practically avoided by Mr. Greene, as our brief description will show.

The basis of the system is the use of strips of opaque material, each actuated by a key similar to those on the key board of a typewriter. These strips, represented in fig. 1, have each a complete fount of type characters (with figures, punctuation marks, etc.), along the face. The strip is varied in width according to the width of the letter or sign at any given point, or it is provided with a longitudinal rib (see fig. 1) which varies in width. Sufficient of these strips to compose the words in one line of type are placed side by side, and by actuating the key-board, they are rapidly run by the spring-

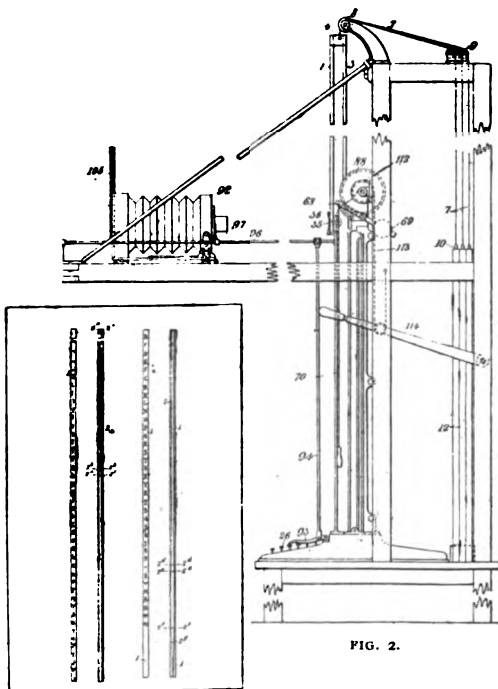


FIG. 2.

FIG. 1.

the work of the compositor, but the great future of the process is suggested in the sentence of the provisional specification which says:—*Negatives or transparencies thus obtained are more particularly adapted for the rapid printing therefrom by photography of a number of copies upon a continuous band or strip of sensitised material*

drum by which each is operated, to the letter wanted. When one line is thus arranged, if the spacing does not fill it out exactly, the strips shewing blanks between the words are run forward to give wider spaces. Each alternate strip is slightly in front of those on each side of it, so that they can overlap sufficiently to give a little side-play, and to allow of the narrow characters coming close together, so as to avoid uneven spacing. These types are made larger than it is intended the resulting negative shall be; and as each line is "set" it is photographed

on to a roll of film which moves forward just the depth of a line after each exposure, and which has only this depth exposed to the interior of the camera at any given time.

It is quite unnecessary to describe the apparatus in detail, as those who wish for particulars can refer to the specification. The diagrams, reduced from two of those attached to the complete specification shew the general arrangement; and the very important principle of the type-band with rib for proportionate spacing of letters and variable spacing between words.

In Natural Colors.

ONE of the most interesting meetings held in London for a long time was that at the Royal Institution on April 17th, at which Prof. Lippmann lectured and demonstrated upon his direct method of color photography. The results, visible only by reflection, and therefore needing to be thrown on the screen by means of an aphengoscope, were brilliant and wonderfully true to nature, eliciting enthusiastic applause.

Within the month, too, we have had fuller particulars than were before given of McDonough's method. The patenting of this process within a few weeks of the patenting of Dr. Joly's process, which is identical in method, was one of the most curious coincidences of invention. We briefly described and illustrated Dr. Joly's process in our issue of February, and that description will greatly help the understanding of the following. The report is from the *Chicago Record*, and the most important points are, first, that Mr. McDonough has completed a satisfactory machine for ruling the screens, and second, that he claims success in applying the process to paper prints.

James W. McDonough, of Chicago, who, according to the records in the United States patent office, was the first American to make a practical telephonic receiver and transmitter, has recently perfected a process by which natural colors are photographed.

The evidences of this important fact are actual photograms of landscapes, men, women, and paintings, taken with an ordinary camera, developed and printed by every-day processes, but differing from ordinary photograms in that the colors, as well as the lines, lights and shades are present.

In a short time, if present plans of a commercial character are successfully realised, any amateur photographer will be able to photograph colors as they are in nature, with all the natural blends, tints, tones and hues.

Three months ago Mr. McDonough realised that he had brought to a commercially successful end twenty years of hard work. The machinery needed to produce those accessories to the ordinary camera and printing outfit required for the reproduction of natural colors was an accomplished fact.

Reduplication of this machinery is all that is needed to manufacture the devices that enter into the McDonough process, and, it is believed,

in a short time a factory will be in full working operation.

The process is exceedingly simple, for in no way is it a radical departure from the methods employed to-day by photographers. The principal additions to the present outfits are a specially ruled screen, which is placed directly before the sensitive plate in the camera, and a specially ruled paper on which the colored photogram is printed.

The plates must be made orthochromatic.

There is some slight difference between developing negatives after the McDonough process and the ordinary way, but not much.

The colored lines on the screen are 300 to 600 to the inch; the top line is red, the next is green, and the next blue, and this order is repeated down the face of the screen. The colors used are aniline, and the lines are perfectly flat—that is, the color is everywhere of the same thickness.

Mr. McDonough described his process as follows:—

"This multi-colored screen is put into the camera in close contact with an orthochromatic dry plate, and the negative is taken through the multi-colored screen. A black and white negative is obtained, with lines corresponding to the screen. From this negative a positive is made in the ordinary manner on glass or paper.

"Suppose I wish to make a positive transparency. It will simply look like any other photographic transparency, with the lines running across. But the instant I place behind this transparency the screen that was used in the camera, or one like it, and make the lines register, the natural colors appear.

"The paper on which the print is made is ruled exactly as the screen is—with the red, green, and blue lines. The colored lines are there, but at a short distance the paper looks perfectly white.

"In placing the paper under the negative for printing, the lines in the negative and those on the paper must coincide, but with the apparatus I have made this registering is simple. The print is made in the usual way, and the result is a photogram in the colors of the object photographed."

A transparency of a landscape taken by Mr. McDonough has in it two young men leaning against stone gate posts. Beyond are trees in autumn colors, with the bright sun shining

through, and the ground is littered with fallen leaves of every hue. A rose bush with a few rose blooms is in the picture, and in the background are some evergreen trees.

The closest scrutiny failed to discover any lapse in the color. There were the autumn leaves, scarlet, yellow, dull green and brown tipped; those with the sun shining through almost luminous. The red roses, every petal perfect, start out through the dark green leaves of a creeper which climbs a tree.

Even the red mortar between the blue Bedford stones is distinctly colored, and any stonemason could name the stone, because it has the characteristic color.

This is wonderful, but even more marvellous is a photogram of a cheap chromo.

"This," said Mr. McDonough, "is possibly the only process that will give exact colors. There is no more trouble to make them than to make ordinary photographs. Up to three months ago the process was experimental, but then I completed the large machine which rules the screens and paper. This machine works rapidly, and I can build as many more of them as I choose to.

"When I started out I made my screen by dusting over my plate, dyes or pigments, of the three colors, crushed fine. The colors were so fine, and lay so closely together, that to the eye they presented a neutral or white color.

"In fact, they made a true mixture of light and not a mixture of pigments.

"At that time I knew that I could get the effect with ruled lines, but I could not rule the lines, so I built a machine. I found that aniline colors were what I wanted, but none of the chemists could give me a fixed aniline color that would not disappear, and I had to find that which would make my colors fast.

"I frequently had to wait until some one discovered or invented something that could help me along, and when no help came I had to help myself. This took nearly twenty years, but now my work is an accomplished fact; experiments are at an end.

"The ruling machine is perfected and is as pretty a piece of automatic machinery as one could wish to see. I have looked out for the army of amateur photographers, and none will have any trouble in registering the negative and paper or producing colored photograms.

"I have made half-tones in the colors photographed, by printing in the printing press from metal plates made by a single negative—not a dozen, as is the usual case—on paper ruled with the multi-colored screen lines. When I sum the whole thing up it amounts to this: The process can be used in any photographic gallery, with any hand or tripod camera for the production of portraits or landscapes.

"With one half-tone plate in a printing press, using ordinary printing-ink, colored half-tones can be produced on the ruled paper, and the colors, tints and hues will be those of the original that was photographed.

"It can be used for commercial photography, and will show the colors as well as the patterns of cloths, rugs, carpets, wall paper, china, dress and dry goods, furniture, etc. It can be and is now used for lantern slides, and this one application itself is important, for one house in Chicago keeps on hand constantly a stock of 250,000 lantern slides and sells 1,000,000 a year. It can be used for copying oil paintings and for scientific work.

"I do not care to discuss my future plans, but I am getting ready to start the commercial part of the process as soon as I have closed up business with the patent office."

The Speed of Plates.

A CORRESPONDENT, who writes from Eastbourne, asks us to arrange a competition or tournament in which he undertakes to uphold the opinion that ordinary plates are as rapid as any plates that can be made. He says:—

"I claim that there is no faster plate than the 'Ordinary' in the market, and am willing to 'open the ball' by placing the Ilford 'Ordinary' against all comers in a fair competition—the time of exposure being $\frac{1}{250}$ th of a second, time occupied in development not to exceed ten minutes; result, the best printable negative free from stain or fog. I to use Ilford 'Ordinary,' others to use any of the so-called fast plates in the market. If any of your readers care to take up this matter I think arrangements might be made."

Of course such an attack upon the sanity of the whole of practical photographers and investigators, as well as upon the honesty of the Britannia Works Co., and of all other firms, who charge or have charged a higher price for "rapid" than for "ordinary" plates, can hardly be treated with any great amount of seriousness. We did ask

the Britannia Works Co. if they would care to reply to the letter, but they apparently do not care to take up such a foregone conclusion. Probably some day our correspondent will be glad that we withhold his name, and in the meanwhile we give one or two simple tests by which anyone can roughly determine the relative speed of plates, and a few experiments with which would have prevented the writing of such a letter as the above. If our correspondent is still anxious to maintain his position after chatting over the matter with a few other members of his society, no doubt he can find someone to take up the challenge, but before doing so we think it would be well for him to detail any experimental work that he may have made, and that seems to give a basis for his idea that slow plates are as quick as rapid.

A simple way by which our correspondent can prove for himself whether all plates are the same rapidity, is by exposing two pairs of plates on a subject shewing a fair range of contrast, one after the other, under exactly the same conditions. One pair of the exposed plates is then developed in the same dish, side by side. Let him develop until

one of them is what he considers properly developed, remove both together, fix and compare results. Further, let him develop each plate separately with a developer of the same composition, getting as much as possible out of each. When each plate has been developed let him again compare results. He will then probably alter his opinion.

If he is still sceptical then let him take a stereoscopic camera and expose the two plates, side by side, with twin lenses, and see the result.

Or further, he may use a simpler method—still quite sufficiently accurate for the purpose. Let him place a half-plate dry plate (of any make) in a dark slide. Then, at three yards distance from an ordinary gas flame, let him expose the plate with the slide fully drawn out for two seconds, then push in slide $\frac{1}{2}$ in. and expose another second, and so on, until the whole of the plate has been exposed in strips by differences of exposure of one second each. On development a series of densities will be obtained. Now paint figures, indicating the number of strips, in crimson lake, make two figures in each patch, two inches apart. Then take six half-plates, brands A and B, that it is desired to test for comparative rapidity (or sensitiveness), and cut them in half, making strips $6\frac{1}{2} \times 2\frac{1}{2}$, numbering each pair. Place the graded negative in the dark slide, film up, put one strip of A on one side of the negative, and one strip of B on the other. Close the slide. Arrange the camera so that the lens points to the clear sky, rack out to focus, and insert stop $f\ 64$ in the lens. Put the slide in the back of the camera, and

expose for two seconds in the sky light. Expose all the pairs of strips in the same way, quickly, one after the other. Now develop the first pair for the same time in a dish together. Repeat the experiment with two other pairs. Now with a developer of the same composition develop each of the remaining strips separately, until nothing further can be brought out of them. When all are finished, sort out into their respective pairs. On examining, the experimenter will see a positive of his graded negative. The extent to which the light penetrating the negative has affected the plate below, can be seen by the figures. These being, to all intents and purposes, opaque, any light penetrating the particular patch can be seen by contrast, the figure showing clear on a ground of more or less density. The plate which registers the smaller amount of light—that passing through the densest square—is obviously the most sensitive. If two plates are of the same sensitiveness, then the figures which show will be identical in each strip. When the strips are examined it will be seen if this is so; if not, the plates vary in sensitiveness.

We have purposely refrained from giving any complicated plan. The method does not pretend to any great accuracy, as it is purely qualitative, and will not give the amount of difference, if any, but will merely show if there is a difference.

If our correspondent does not want to be hopelessly and ignominiously beaten in any contest, he will do well to avoid the same. We should advise him to perform the experiments in the sanctity of his own dark-room, and then discreetly keep a still tongue.

The Autocrat of the Work-room.—How to Make Stamp Portraits.

"POSTAGE stamp portraits" are usually produced, on a commercial scale, by means of a camera of the well-known "Gem" type, fitted with several lenses. Some of these cameras are built with four lenses to make twelve negatives on a quarter-plate, the negatives being made four in a row at each exposure, and the plate-holder being moved between each exposure so as to bring the rows side by side. A better class of camera for the purpose is fitted with twelve "Gem" lenses operated simultaneously, thus making all the negatives at once.

Other cameras are fitted with a shifting back arrangement, enabling 144 negatives to be made on a 10 x 8 plate.

For the amateur, or worker on a small scale, such a camera is hardly necessary, but the general arrangement of the characteristic stamp border is similar in all cases.

Some photographers make a specialty of producing stamp portraits from any cabinet or c.-de-v. print; the stock-in-trade (if we except the special camera) is small, and consists of a few postage-stamp border outlines on cardboard or glass, designed with openings for cartes and cabinets. The print is placed behind the opening and held firmly in contact in an ordinary printing frame, it is then reduced to the desired size (say, 12 to the $\frac{1}{2}$ -plate), toned and fixed in the usual way. The back is next coated with dextrine gum and

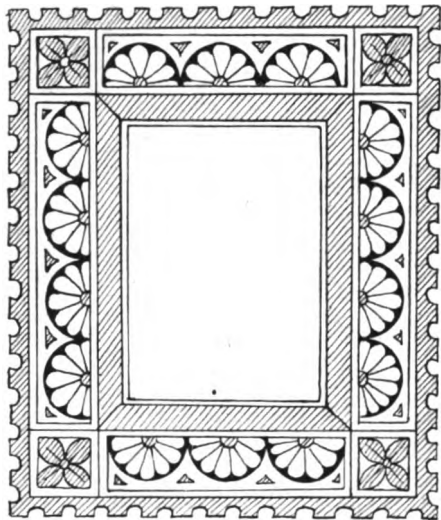
allowed to dry, when the perforations are made, either by means of a special (rather expensive) machine, or with a sewing machine needle. The drawings herewith will give some idea as to the border designs generally employed, though they may, of course, be made in a variety of styles according to individual taste.

As a matter of experiment it would be well to photograph one of these designs upon an enlarged scale, say, large enough for the opening to accommodate a carte print.

From the negative so obtained, make either a print or a transparency on glass; I much prefer the latter. If a print is employed it should be mounted on cardboard (or glass), and the central opening cut away. If a glass transparency (either in carbon or gelatino bromide) is made, it will be advisable to coat all of the design, except the central opening, with good white or tinted oil paint, and this coating must be done upon the film side. The glass plates are far better than cardboard for this purpose, because they can be kept clean with so little trouble, and are always ready for use.

In order to produce a stamp portrait copy, it is only necessary to put our transparency (or cut out) into a printing frame, adjust the portrait over the opening and fasten the back in place. Then photograph in the usual way to the desired size upon a $\frac{1}{2}$ -plate. Several copies may be made at

once, even with a single lens (in order to economise in printing) if there are several portraits of the same size to be made. They should be placed as close together as possible, and, of course, in the same plane, in order to avoid distortion and blurring.



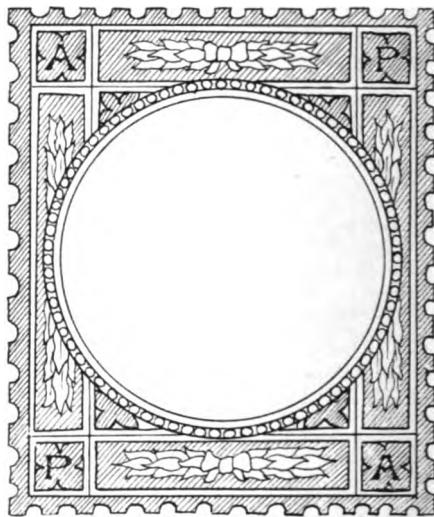
Stamp portraits may be made from life in a very similar way, thus:

Make an enlarged copy of the border design, leaving a sufficiently large opening to accommodate the human head and bust with marginal space; it can be either made photographically or by bold sketching upon a sheet of cardboard.

The central opening must be cut away and the card should, for convenience sake, be attached to a baseboard in order that it can stand upright when placed upon the floor. The sitter must be posed behind the opening, and sitter and design photographed together.

If many thousand copies are required from one portrait they can be readily made without a multiple camera, but it means rather more preliminary work.

I should proceed thus: Make a good copy of portrait and border on a half-plate, and from it make



a dozen prints. Mount them all upon a stout sheet of card, with their edges touching each other, and reduce all together on a $\frac{1}{2}$ -plate (or in similar proportion in greater numbers upon a larger plate), making as many negatives as the exigencies of the case demanded.

The prints are easily perforated on an ordinary sewing machine, using a fine needle, a small stitch, and, of course, no cotton. Plain needles, without eyes, can be obtained, and give round holes. As a rule stamped portraits are squeezed to a talced plate of glass or ferrotype metal, and their backs then coated with gum before perforation.



1. "The Sensible Exposure Note-Book." Price, post free.
2. "Professor Röntgen's X-rays." By August Dittmar. London: Whittaker & Co., Paternoster Row. Price 9d., post free 10d.
3. "The Year Book of Photography." Price, 1s. nett, post free 1s. 4½d. London: 22 Fumival Street, E.C.

The Magic Lantern Journal is to produce an Annual in August next.

Dr. Nichol has succeeded to the editorial chair of *The American Amateur Photographer*.

The Frena Exposure Book is long and narrow, prettily bound in red cloth, and arranged for the registration of exposures. The hints and tables at the beginning of the book are simple

and understandable, and should save a good deal of uncertainty.

A Handy Little Text Book of 32 pages (2), dealing with the X-rays, has just been issued. It contains a considerable number of diagrams and a two-page radiogram in collotype of a fractured arm. The matter is compiled from various sources, and the first two parts, which are introductory and which deal with the apparatus and with Professor Crooke's experiments on radiant matter, seem somewhat disproportionately long. The third and fourth parts give practically all the conclusions with regard to the X-ray work up to the time of writing, and should prove useful to many who think of taking up the subject.

The Sensible Exposure Note-Book from Archer and Sons, Liverpool (1), makes a special feature of devoting a whole page to each subject exposed. By so doing there is ample room for writing all particulars, and space for remarks, either with regard to the exposures and subjects, or with regard to experience in developing. A very brief, simple exposure table is given at the

front of the book, and there is a useful reminder list to prevent the tourist starting with any serious omission from his outfit.

Photograms of '96 is already bound to be a success. The response to our invitation in last issue has already been most generous, and some of our readers have anticipated the invitation, for we have three sets of pictures offered from Australia, one from New Zealand, and one from the United States. Several examples of British work that will be submitted to this year's exhibitions have been received, and in no case do they fall below their producers' standard. From Vienna, too, from Charles Scolik, we have some beautiful examples of excursions in the realm of fancy. It is going to be a most difficult task to choose from so much good work, but we shall be glad to see more and more of it.

Our next issue will be more than usually full of interest. The beautiful district to be visited by the Convention will be described, and illustrated by reproductions of fine work by Yorkshire photographers. *Portrait workers* will have an artistic treat in, and should gain real help from, an article on the work of H. H. Hay Cameron, illustrated by four of his studies. "Painters' Studies" will be continued. *Architectural Notes*, by Harold Baker, illustrated by Oliver Baker, R.P.E., will be resumed, and continued month by month. The latest *Scientific Application* of photography will be treated and illustrated by Prof. David E. Packer, and *Practical Workers* will find many useful notes and articles, including "Principles of Stereoscopia," by E. J. Wall, F.R.P.S.; "Plain Salted Papers," by G. H. Moss, etc., etc. *The Autocrat*, and our other usual features will be continued.

Painters' Studies.—Our studies this month are being painted at Heatherley's, and are posed and arranged by Mr. Crompton. The model in *The Alchemist* is J. McNab; and in the study of *The Warrior* is C. H. Ford. The latter is taken to shew the general arrangement of the front of the school, and next month we shall give the study itself, without its surroundings. At the same time we shall reproduce an alternative study of *The Alchemist*. It will perhaps add something to the interest of the series if we point out that all the models are well-known painters' studies, and that they may be recognised in various costumes and conditions in the canvases at some of the leading picture exhibitions.

An old friend with a decidedly new face is the "Year Book" (3), which has just made its thirty-seventh appearance. Like the *News*, with which it is connected, it has completely changed in appearance and character, and, on the whole, decidedly for the better. The usual "useful articles" that form the bulk of the typical year book are collected into Section I. Section II. is a decidedly valuable collection of matter, under the title of "Facts and Formulæ," arranged by E. J. Wall. Section III., a Holiday Guide, compiled by the Rev. F. C. Lambert, M.A., opens with a few pages of useful "tips for travellers." Section IV. is a practical instruction book for the amateur lanternist, by Cecil M. Hepworth; and the concluding section deals with the new apparatus of the year.

In the opening article of this number are two very charming incidental bits by Hans Bayer, of Vienna, selected from a very large series which he kindly submitted to us a little while ago. Not only the photograms, but also the surroundings are produced by this gentleman. The originals submitted to us were photographically copied from photograms surrounded by designs in wash or ink, but the blocks that we use are reproduced at twice:—the centre piece in half-tone and the surroundings in line. They are excellent examples of the decorative use of photography, and should prove suggestive to many who wish to adapt their photographic results to useful purposes, whether such purposes be the decoration of mantel pieces, the making of dedication pages for the fronts of gift books, or the production of Christmas or other greeting cards. In this connection we would remind our readers that the time for our Christmas Card Competition is approaching, and suggest that they keep constantly on the look out for subjects suitable for the special shapes that we fixed (see page 39 of our February issue).

BY AN ERROR, some of the signs in the article "Depth or Focus," by the Rev. T. Perkins, were wrongly printed. The following will, however, put the matter straight.

The error may be rectified by changing the sign of addition (+) wherever it occurs in the text on page 124, into the sign of multiplication (×). Every + on page 125, with two exceptions, should be similarly changed. The two exceptions are the + between 10² and 8 and between 100 and 10², in line 8 of the first column, where + is correct. There are a few other misprints, which the reader will naturally correct for himself, including the italic x, written for the symbol expressing "etcetera." "Not," the second word of the sixth line from the bottom of col. 1 of page 124, must be omitted. In the expressions for AA² and AA⁴, page 125, col. 1, not only must the + be changed, but ÷ f² inserted at the end.



Is Photography Art? A partial answer, quoted from many London and provincial newspapers, will be found amongst our advertising pages.

The Harrison Fund is not progressing so rapidly as its friends would desire. The total, at the time of going to press, is £60 11s. We hope that none will hesitate to support so good a cause.

We regret to have to record the death of Thomas Keig, photographer, of Douglas, Isle of Man. A few weeks ago he was elected Mayor of that town, but died recently from the effects of cancerous complaints. He was sixty-seven years old.

The Derby Corporation is arranging an important exhibition of photography, opening July 1st. Gold, silver and bronze medals are offered. Particulars from W. Crowther, curator, Art Gallery, Derby.

The Photographic Convention of the United Kingdom will meet this year at Leeds, under the presidency of H. P. Robinson, and with R. P. Drage as general secretary. A strong

reception committee has charge of the local arrangements, a number of important papers will be read and discussed, there will be the usual reception on Monday evening, July 13th, and the Convention dinner on the Friday following. Excursions have been arranged, with special facilities for photographing interesting objects, and including the delightful districts of Fountains Abbey, Bolton Abbey, York, Helmsley, etc., etc. The Reception Committee is headed by the Marquis of Ripon, K.G., J. H. Walker is the Chairman of the Executive, with Herbert Denison as treasurer, and Godfrey Bingley as local honorary secretary. The Mayor of Leeds (The Right Hon. W. L. Jackson, M.P.), will give the reception to the members of the Convention on the opening evening, and the exhibition of 100 modern pictorial photographs, arranged by the President, will be sure to prove an attractive feature. Both amateur and professional photographers are invited to become members, and the subscription is only 5s. Don't forget.

The Camera Club has had a bad time during the past year or so, and at a crowded meeting of members, held on April 24th, the financial status was resolutely faced. Considering the good work that the Camera Club has done it would be exceedingly regrettable if its existence should cease, and perhaps this is a fitting occasion to suggest the possible increase of strength and usefulness that might come from a relaxation of the stringent rule of excluding professional photographers and others who gain their living or a portion thereof, directly or indirectly, from photography. Considering that amongst the most honored members of the Camera Club there are some who are very distinctly professionals and dealers, it seems a pity that this rule cannot be expunged, and the selection of fitting and proper persons for membership left entirely to the good sense of those who vote at the election of members.

Prize Competitions.

Competition No. 8.—As the first two of our "Beauty Spots" Competitions have been decidedly disappointing, it is a pleasure to find that the third has been fairly supported. Although we were warned that confining our subject to a given district would confine the competition to workers in the centre of that district, we are glad to find that this is decidedly not the case in the present instance. In fact the Edinburgh people, although a few have sent good work, have not supported the competition so well as the men at a distance. From the pictorial point of view none of the competitions have been so satisfactory as we had hoped, for the competitors seem to have aimed at typical scenes in the district rather than pictures. The present competition included some excellent architectural work, as was to be expected from a district including so many beautiful ruins. There was some difficulty in awarding the prizes, but considering that they were offered for *sets of three prints*, we have decided to give the first to C. P. Cameron, 1 Eyre Place, Edinburgh, while the second goes to G. A. Morgan, Alloa, N.B. If this latter gentleman's set of three had been equal to the best of the works he sent in, we should have awarded him first place. To John Beeby,

New York, is awarded a certificate of honorable mention. This result places the Edinburgh Society again ahead in the Societies' competition with $3\frac{1}{2}$ marks, compared with 2 by the Liverpool.

SOCIETIES' PRIZES.

Present Scoring—	Society.	Points
Edinburgh Photographic Society...	(Won by Miss Christian H. Curle, and C. P. Cameron.)	$3\frac{1}{2}$
Liverpool Amateur Photographic Association...	(Won by Dr. John W. Ellis.)	2
Leeds Camera Club...	(Won by Morris May.)	$\frac{1}{2}$

Competitions Nos. 4 and 5, the report on which was delayed owing to the fact that a considerable number of French and German articles were received quite at the last moment, and that considerable time was occupied in the translation of these articles, and their circulation for judgment by the whole of our staff. It will be remembered that these competitions were open from the beginning of November till February 29th, and that the prizes were offered for the best articles contributed, first to *The Photogram*, and second, to *The Process Photogram*. The prizes have been awarded as follows:—£5 5s. to H. D. Gower, 55 Benson Road, Croydon, for article on "Photographing and Coloring Still Life Subjects Printed in Platinotype;" and £5 5s. for an article by A. Villain, 17 Route de Flandres, Aubervilliers, for an article on "Attaching Photographic Films to Metal Plates or Rollers." An article by George Gillingwater on "Studio Rock Work" was highly commended, and we have sent to him one of our handsomely framed certificates of honorable mention.

Consolation Prizes.

In this literary competition we offered to accept and to pay for, at our ordinary rates, any articles that might be considered sufficiently good, although the prizes were not awarded to them. We have accepted such articles

To the value of about £115.

Many articles have already been inserted and paid for, while others will be used during the few months that are coming. We can express the heartiest possible satisfaction at the result of this competition, for it has brought us an immense amount of good matter on a great variety of subjects; and has induced several good practical workers to take their first steps in photographic literature. We are still open to receive practical articles on photographic matters, especially such as require and can be greatly helped by illustration; and, all other things being equal, we shall always give preference to young writers whose work has not been hall-marked by long service.

Forthcoming Competitions.—We would remind our readers that our Competition No. 9, the fourth of "Beauty Spots" series, closes on May 31st. Those who receive their magazine early will just have time to send off a set of pictures. The district chosen is the beautiful country in which the Convention is to be held this year. The concluding competitions are:—

No. 10.—Views in Warwickshire, closing June 30th, 1896.

No. 11.—Views in London (within seven miles of G.P.O.), closing July 30th.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

James D. Griffin, Birmingham.
Hare & Co., Bride Court, E.C.
The Imperial Dryplate Co., Cricklewood.
Archer & Sons, Liverpool.
H. Kuntzen & Co., Camomile Street, E.C.
J. Humphrey, Birmingham.
Leo Atkinson & Co., Greenwich.
Adamson Bros., Eldon Street, E.C.
Winsor & Newton, Ltd., Rathbone Place.
The Blackfriars Photographic and Sensitising Co., Surrey Row, S.E.
The Art Reproduction Co., Plough Court, E.C.
The Corporation Art Gallery, Derby.
Clement & Gilmer, Paris.
W. Butcher & Son, Blackheath.
The Scientific Hand Camera Co., Queen Victoria St., E.C.
The Sunbeam Lamp Co., Ltd., Gateshead-on-Tyne.

New Goods, &c., Advertised.

Plates and Films. B. J. Edwards & Co.
Wood and Photo Engraving. Hare & Co.
Bamboo Camera Stands. J. Humphrey.
Imperial P.O.P. The Imperial Dryplate Co.
Colloidio Chloride Paper. H. Kuntzen & Co.
The "Tourist" Hand Camera. Archer & Sons.
The "Griffiths" Hand Camera. The Blackfriars Photographic Co.
X-Ray Developer. Leo Atkinson & Co.
Photographic and Microscopic Glass. James D. Griffin.
The Lothian "Cyclist" Camera. A. H. Baird.
Artificial Light, &c. Adamson Bros.
Albanine and Process Black. Winsor & Newton.
The "Psycho" Camera. J. R. Gotz.
Process Blocks, &c. The Art Reproduction Co.
Summer Photographic Exhibition. The Derby Corporation Art Gallery.
The "Omega" Camera, Anastigmats, &c. Clement and Gilmer.
The "Primus" Cameras. W. Butcher & Son.
The "Scientific" Hand Camera. The Scientific Hand Camera Co.
The Sandell Plate. The Sandell Works Co., Ltd.
X-Ray Tubes. The Sunbeam Lamp Co.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk (*) indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

Aluminium Paper. Manufactured by Dr. G. Krebe, Offenbach-on-Main. Sole Agents: H. A. Schildknecht and Co., 3 Paper-street, Redcross-street, London, E.C.

Matt Pyramid Grain Silver Chloride Paper. Price 1s. 9d. per 25 pieces, 4½ x 3½; postage 3d. extra. Half-plate, 3s.; whole plate, per 12 pieces, 2s. 9d. Manufactured by Gustav Schaeffelen, Photographische Papier-fabrik, Heilbronn. Sole Agent: C. A. Rudowsky, 3 Guildhall Chambers, London, E.C.

Papier Calcium Brilliant. Price per sheet: 1s. for the glossy surface, and 1s. 2d. for the matt surface. Per quire, 20 x 24 inches, glossy, pink, or mauve, 20s.; Saxe, 18s.; matt, 22s. L.

Gevaert & Co., 97 Rue Anselmo, Antwerp, Belgium. Sold by all dealers.

Bridges' Lantern and Transparency Plates. T. C. Bridges, 38 Charles-street, Bradford.

Fluorescent Screen. May 8th. Half-plate, 5s.; 8 by 5, 8s. Leo Atkinson & Co., 193 Greenwich Road, S.E.

Litmus Pencil. May 9th. Price 1s. 3d. each. T. Christy and Co., 25 Lime-street, E.C.

APPARATUS.

"The Tourist" Folding Ruby Lamp. Price 10d.; post free, 1s. 2d. Spiers and Pond's Photographic Stores, Queen Victoria-street, E.C.

CAMERAS.

Hand Camera, No. 3 Frena, in 5 by 4 size. May 6th. Price £12 12s. R. & J. Beck.

The Scientific Hand Camera. May 1st. Price: Quarter-plate, £14 14s.; 5 by 4, £16 16s.; half-plate, £19 19s. The Scientific Hand Camera Co., 97 Queen Victoria-street, E.C.

Received Late.—The Imperial P.O.P., "ten pennies a packet" and the Barnet Films. To publish before the Whitsun holiday we necessarily go to press early. These goods will be more fully referred to in our next.

"The Tourist" Folding Ruby Lamp is remarkably well made, and is collapsible into very small space. There is no glass in its construction, the light being confined within a folding metal frame work, to which is rivetted an endless band of ruby fabric. It is intended for nightlights, and the top and bottom are of Russian iron, fitted with light traps. The ventilation is good, and the absence of black japanned tin ensures freedom from smell. It will be of great use to tourists.

Bookstall Plates.—The photo-material dealers will hear with little satisfaction of the issue of W. H. Smith & Son's "Tourist Plates," which are to be on sale at all railway bookstalls. No doubt it is a good business move of some enterprising plate-maker, and will be appreciated by touring amateurs. We shall speak of the quality of the plates next month.

A New Pyramid Grain Paper comes to us from C. A. Rudowsky, in four tints: white, sky-blue, sea-green and brown. Its makers claim that it is not affected by different temperatures, and that it is more permanent than albumen, gelatine, or colloidio paper. Several formulæ, and very careful directions, are given for toning. The paper prints quickly, yields readily to toning, and should be of value to those desiring a variety of color. Strong negatives are required. Large sheets, 2½ x 19½, can be procured.

Leo Atkinson & Co., of Greenwich, have had some wonderfully successful results in the way of short exposures in radiography, and have also put on the market a special fluorescent screen, in the preparation of which they have had the assistance of A. Haddon. Another specialty which they have placed upon the market is a special developer, for which they claim very distinct advantages, and although we have not yet been able to try it, if we may judge by its results, it is an excellent developer for X-ray images.

Tyree's Litmus Pencil has been long known and highly appreciated in America, and we are glad to find that it is now on the British market. It consists of a pencil similar in appearance to the ordinary blue and red chalk, but with chemically pure red and blue litmus in place of the usual filling. The form is a handy one, as it keeps the test from the air and damp. To use it is only necessary to make a mark on a piece of white paper, which then becomes a test paper.

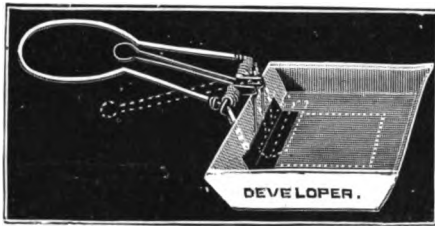


The No. 3 Frena, in 5 by 4 size, is just ready for the market. Like the other cameras bearing the same name, it is a monument of ingenuity, and a fine example of thoroughly good workmanship. In general design it is on the lines of the other Frenas, which are already well known to our readers.

The Cathodal Plates of B. J. Edwards & Co., which we briefly announced last month, we have since carefully tried. We find that with comparatively short exposures they give very dense deposit of silver. They are based on the suggestion of Dr. Oliver Lodge that a fluorescent substance should be incorporated with the emulsion.

The Calcium Paper sent us for trial, by Gevaert & Co., seems to have greatly pleased Continental workers, and has some excellent qualities. It prints rapidly and tones easily, but requires care in manipulation, and the makers urge its being kept in the original packets. Toning is to be done by diffused or yellow light, and the baths must be of uniform temperature. Formulae for both combined and separate solutions are given, and the latter recommended. If matt paper is used, it is to be toned in the sulphocyanide bath.

A Curious Device, but one which will doubtless be very much appreciated by many amateurs, is a combination of dish holder and plate lifter for development purposes. It is placed on the market by W. Butcher & Son, Blackheath, and is well made in gold-covered wire and ebonite. By



those who strongly object to stained fingers, and clothing contaminated with drips of developer, it is sure to be valued. This firm has also placed on the market a handy tripod stand at the exceedingly low price of 6s. It is called the "Alpenstock."

The Dry Plate Business scarcely seems to be suffering much when we find that almost all the makers of reputable plates are distinctly increasing their output and their facilities. A note in "Dry Plates," issued by Cadett & Neall, is interesting. They say it is barely four years since they commenced the business with a factory which they thought would meet all possible requirements for a considerable time. Before long they had to extend this factory, since then they have built another, and they are now building again—the present additions being sufficiently extensive to double the output.

Aluminium Paper is called by its maker a substitute for albumen paper, and has some advantages over the latter. Strong negatives give best results, but, with care, thin ones can be used. Treatment is the same as with albumen paper, and formulae are given for borax, lead, and neutral chalk combined baths. The directions sent out have the great merit of extreme simplicity and are easily followed. Dr. Krebs also makes a collodio-chloride paper called Helios-Celloidin, and a substitute for platinum, called Palladium paper. These sell by the sheet of 21 x 16 inches; for the former, 11d.; and the latter, 1/2. Cut sizes can be obtained if desired.

Quite a collection of novelties is offered by Josiah Pumphrey, of Birmingham. The bamboo camera stands, of which he has for some time made a specialty, are now listed with several new patterns, bringing up the choice to no less than thirteen different styles, at prices ranging from 5s. to 14s. 6d. A capital leather camera stand holder has been arranged for his adjustable stands. The alboruby lamp is a very good line at a reasonable price, burning oil and giving an easy change from white to ruby light. Ball and socket stand heads, in three sizes, and a very handy lanternists' kit, which includes line tongs and borer, and a variety of metal connections, nipples, and two-way pieces, complete the new lines issued by this gentleman. His catalogue is in the press, and will be sent free to anyone asking for it.

Wellington & Ward send us a sample of their gelatino-chloride paper, which we have tried with satisfactory results. It gives prints of good quality, and tones and fixes evenly and well. We have also received samples of the new

negative film turned out by the same firm, which we feel sure will be appreciated. Briefly, the film, which is of fair thickness, is supported on a backing of paper from which it can be stripped after development, at once or later, and transferred to glass, on which it may remain, or from which it may be afterwards removed and used as a film negative. Although the process of stripping is exceedingly simple, those who may be too lazy, or who lack self-confidence for stripping, can get very good results indeed by using the negative with the paper attached. This film, when supplied in spools for hand-camera work, is very ingeniously rolled on a patent system. In fact, the spool consists of the film itself. The first lap is glued on itself, and a stiffening rib formed by indenting the film. This has a distinct advantage, as it allows these films to fit any wooden holders already generally in use. As far back as the last photographic convention we saw samples of excellent work done with this film, and we think it is decidedly to the credit of the firm that they have kept it off the market so long in order to eliminate any possible difficulties. To protect from silver stains, Messrs. Wellington and Ward supply a varnish which is readily applied. The film is sent out in cut pieces and in rolls. We should think that photographers will find the articles decidedly useful to them.

The Bridges' Lantern Plates have been put on the market, and a sample sent us for testing. The maker gives careful directions for exposure by contact, and also formulae for hydrokinone developer and ferrous oxalate, the latter warranted to give a good range of tones. We tried the plates with our own developer, eikonogen and hydrokinone, and found them work exceedingly well, with somewhat long exposures, giving good brilliancy, gradation, and density. They were used for reduction by ordinary daylight, and ought to be very useful with soft, thin negatives. We suggest that the glass should be more accurately cut, as we experienced some difficulty from that cause.

The Scientific Hand Camera is a new camera of excellent quality giving an identical view-finder by means of twin lenses, and yet exceedingly compact. In addition to the full size finder obtained by the twin lens system, the camera can be used on a stand, and the image seen on the ground glass at the back. The details are unusually perfect, even down to the carrying case and the leather used for covering the camera. It has a graduated scale by which it



can be focussed without using even the finder; as well as spirit level and all the usual small details. The lens is a rapid rectilinear by Wray, fitted with Iris diaphragm, and working at F8 to F64. The shutter is by the Thornton-Pickard Co. The management of the London office of the Scientific Hand Camera Co. has been taken by Lambert Matthews, a gentleman well known in connection with a patent portable lantern.

CATALOGUES.

THE AUTOTYPE CO.'s list, just issued, is timely, since carbon work appears to be coming distinctly to the front. Four pages of condensed instructions should prove very useful.

FALLOWFIELD'S REMEMBRANCER for May contains about the usual quantity of genuine novelties, and is accompanied by a sixteen page clearance list of surplus materials, which includes many thousands of items slightly damaged but perfectly good for use.

THE FIRST CATALOGUE issued by W. P. Buchanan of Philadelphia was far ahead of the general catalogues up to that time, in arrangement, and also in style of printing.

His '96 catalogue for professionals shows he has kept in every respect abreast of the times, and there is much in it that is suggestive and useful. Amongst the most attractive lines are some representing Hetherington's backgrounds. They are the first illustrations of backgrounds we remember seeing in which the backgrounds and the subjects are really suitable to each other, and fairly treated.

A LARGE HANDSOME CATALOGUE has just been issued by Marion & Co., and like the catalogues that they have regularly issued for a great number of years, contains particulars of a wonderfully complete assortment of requisites for both professionals and amateurs. Of course considerable space is devoted to photographic mounts and albums, and includes particulars of many exceedingly tasteful designs that have been introduced by the firm within the last year or two. The art studies of Downey & Co., for which Marions have made an enormous demand, are illustrated by capital half-tones, which remind us that a few of these studies might very attractively be arranged in any photographer's waiting-room or window.

"THE IMPERIAL HANDBOOK" steps decidedly ahead of the usual trade catalogue, and although it devotes space to formulæ for developers found most satisfactory with the Imperial plates, paper, etc., and for instructions specially intended for these Imperial goods, it has also a number of excellent articles. The Rev. F. C. Lambert gives practical hints on Outdoor Photography, E. J. Wall writes clearly and concisely on Darkroom matters, while Dr. Ackworth treats the choice and the making-up of developers. The Imperial Flash Light Plates have, of late, increased their speed numbers by giant strides, and this catalogue lists them as registering from 300 to 400 H. & D. We have used them up to 350 H. & D. with considerable success, both in ordinary photography and Radiography. It is possibly not generally known that the Imperial Co. makes a special "tropical" dry plate which is intended to prevent frilling when the developer is warm, and that they make a special slow landscape plate and a snap-shot film.

Radiography.

T. C. Hepworth, the late Editor of *The Photographic News*, is lecturing on Radiography.

Special Plates for radiography are now offered by B. J. Edwards & Co., the Imperial Dry Plate Co., and the Sandall Works Co. while several other firms announce their rapid plates as being specially suitable for radiography.

The Glass for Tubes.—The most suitable glass is that having a basis of potash, soda, or lime, and giving a yellow fluorescence. The lead or crystal glass giving blue fluorescence is partly opaque to the rays.

X-Rays Polarised.—Prince Galitzine has found a greater absorption through two tourmaline plates when the axes are crossed than when they are parallel, thus showing that the X-rays are capable of being polarised; other workers contradict this.

The position of the tube with respect to the coil seems to have some influence upon the production of the rays, when the axis of the tube is parallel to the core it gives the best results. This may be due to the electro-magnetic field surrounding the coil.

Stereoscopic Radiograms of well-formed human skeletons, are suggested, by *The Optician*, as likely to be valuable to students of painting and surgery, and W. I. Chadwick has made such stereograms of parts of the human skeleton, and of the skeleton of a rabbit.

Influence on Bacteria.—In contradiction to the original report, Profs. Pratt, Bennett and others, say, that the rays have killed certain

bacteria, viz.: cholera, anthrax, pneumonia, diphtheria, and others; this, if true, seems to open up great possibilities in medicine.

The Fluorescent Screens made by W. Watson & Sons, are excellently arranged. The fluorescent material is coated on black celluloid, by the use of what chemists know as "flexile" varnish (collodion with a little castor oil), and the face is covered with a sheet of transparent celluloid.

Fluorescent Screen.—Edison has discovered that calcium tungstate properly crystallised, by fusing together anhydrous sodium tungstate and calcium chloride, and spread in a thick layer upon paper, fluoresces well under the X-rays. Potassium platino-cyanide is found to be better than barium. It should be in the hydrated condition, finely powdered, and spread in a thick layer with gelatine or gum, on cardboard. Scheelite or native calcium tungstate is also used.

Applications of recent date.—The detection of infernal machines in Paris and London has met with great success, the interior being disclosed without danger to the investigator; also for detecting coins, etc., transmitted contrary to regulations through the post. The rays have been used in Munich for determining the bone forming properties of certain animal foods, the subject being radiographed at certain intervals, and the transparency of the bones determined, the opacity of the bones depending upon the quantity of the mineral matter present. The fluorescent screen has greatly facilitated the use of the rays in surgery, as the object and the instrument by which it is to be extracted can be seen at one time.

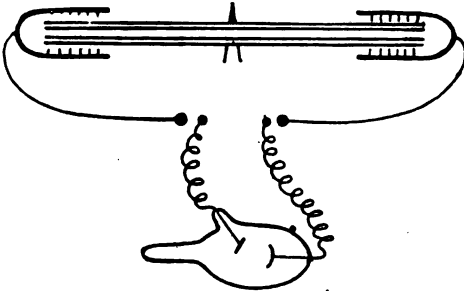
Reduction of Exposure can be secured by placing the plate, film side downwards, in contact with powdered fluor spar. The best results are obtained by using celluloid films, glass being partly opaque to the rays. A platino-cyanide screen will have the same result, but the crystals being larger produce granularity. Prof. Woodward has found that by using a tube entirely constructed of aluminium in the form of a cone, and by using a potential of 50,000 volts, a hand can be radiographed in five seconds. The cathode is in the form of a platinum disc placed toward the base of the cone to one side of the centre, and parallel to the side of cone. It is said that the support upon which the plate is laid, while radiographing, influences the exposure, a wood table increasing it; and it is recommended that a thin sheet of iron be placed under the coil and plate.

Röntgen outdone.—Professor Davis, of Parkersburg, U.S.A., is reported as having discovered a means of making all substances transparent. Three bottles of certain different solutions are placed behind (say) a deal board; and a fourth bottle containing another solution is placed in front, with the result that the portion of the board in line with the bottles becomes transparent. A communication to the American Chemical Society is said to summarise the discovery, as follows:—

"I have found, by a combination of four chemicals, that I can make transparent any opaque object, one being on one side of the opaque object and the other three on the other side. I have

further made a second and later discovery, that the powers of the chemicals can be transmitted by means of small wires to a metal plate, which, if enclosed in a dark box, makes a sort of fluorescent screen, and by looking through it, all opaque objects become transparent, the same as if looking through the one bottle of chemicals."

Wimshurst Work.—Mr. Nottcut, of Ipswich, has employed a Wimshurst machine to excite the Crookes' tube by means of the arrangement given in the diagram.



He finds that two gaps, over which the sparks have to leap, are better than one, and that one gap should be greater than the other. He finds that Leyden jars introduced do not make any improvement. They make the fluorescence brighter, but far more intermittent. The machine was a 24 in. double plate machine, giving 5 in. spark in air. In using the Wimshurst it is most important that the plates be free from dust and damp, also the glass supports to the conductors. Very good results are also obtained by the Bonetti-Wimshurst, this machine having no sectors upon the plates, which are of ebonite, and, therefore, the sparks are much thicker, and more current passes. Good results have been obtained by Dollond & Co., of Ludgate Hill, E.C., with a focus tube, in 1½ minutes' exposure. Messrs. Dollond also supply Prof. Puluj's tube, as illustrated in *The Photogram* for April.

Dr. McIntyre's Work.—Dr. McIntyre, of Glasgow, writes:—During the past month a great deal of discussion has taken place in the scientific journals about the use of fluorescent screens in reducing exposures. It may be of interest to note that instantaneous radiograms can be got by a slight modification of the apparatus with the ordinary Crooke's focus tube, without any screen. From a number of observations made on reading the current as measured on Lord Kelvin's ampere gauge while the coil was in action, I was able to show that with a mercury interrupter, properly adjusted, a much larger current passed through the primary coil, which naturally gives higher induced currents in the secondary and therefore more brilliant fluorescence, and greater actinic power. I have radiographed the bones of the hand and other objects with one flash of the tube, due to a single interruption of the eleven inch spark coil. What the time of exposure was no one can tell, but it must be an unknown and exceedingly small fraction of a second. I find the pictures obtained by instantaneous exposures are much better defined than anything I have yet done. With ten flashes of the tube I obtained

better definition of the bones of the hand than in any radiogram I have ever taken with longer exposure. These radiograms of course, were taken without fluorescent screens, Paget xxxxx plates were used and hydrokinone in developing.

I have made a number of experiments with a view to radiographing the soft tissues of the body, and have succeeded with the tongue, hyoid bone, cartilage of the larynx, upper part of the windpipe, &c., through the tissues of the neck in the living adult subject. The muscles and fasciæ have been brought out in a number of the radiograms. At present I am engaged in experimenting with the blood vessels. On the enclosed radiogram you will see a distinct image of the heart, showing its pyriform shape, the right and left borders in relation to the spine and ribs; the base is seen resting on the diaphragm below, and the apex near the upper part of the sternum, where the large blood vessels spring from, can be perfectly easily made out. Three spots appear on the radiogram as well, which indicate buttons, the exposure having been made through some of the clothing. I have also seen a distinct shadow of these soft tissues on the fluorescent screen; the cardiac area being quite distinct by direct vision.

Radiographic Studios appear to be opening everywhere. One of the latest is at the London Stereoscopic Co.'s premises in Regent-street. Jones & Scott, of Exeter, have fitted themselves very completely, under the advice of J.W. Gifford, for all classes of surgical work. Unfortunately, some of those who have gone into the line are already working at ridiculous prices—an original surgical radiogram for half-a-crown, for instance—but our own experience of the uncertainty of the subject, and the skill necessary to ensure any regular success, makes us think that these people will not long keep to such prices, or anything approaching them.



Letters from the following will be answered if they care to send stamp for reply:—C. F. L. (Liversedge), Arthur T. (Newcastle), W. W. (Croydon).

Name wanted of the sender of a short article on the "Improvement of Flat Negatives." Neither name nor address seems to have reached us with the article.

Answers to Correspondents are sent direct by post to those who enclose a stamp for reply. Letters without stamp for reply receive no attention.

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THE PHOTOGRAM

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No. 31.

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The New Astro-Photography.

BY DAVID E. PACKER.

IN the spring of 1893, it occurred to me that the electrical radiance from the sun and stars or any other incandescent source should register itself upon a photographic plate, provided the plate was excited, during exposure, by the passage of an electric current.

Innumerable experiments were made to test the correctness of this inference, and the results obtained were so astonishing that I ventured to communicate my experiments to several leading papers and scientific societies in this country, who, however, regarded the discovery with incredulity and, with one exception, refused to publish my work. In the *English Mechanic* only I succeeded in getting two preliminary articles (vol. lviii., pp. 422-564) published, entitled "Electro-Photography, a New Field of Astro-Physical Research," which, at the present moment, are of extraordinary interest and importance, as in several important points I had anticipated the new radiography. A brief account of these early researches may not be uninteresting, and they are important as throwing light on my subsequent work.

I found that when an electrically excited photographic plate was exposed to the image of the sun or a star in a camera, and developed in the usual way, that beside the normal actinic image, another and much fainter image appeared at a little distance from it. This secondary image did not appear when the current was not used, and its deflection depended on the strength of the current employed. When the solar spectrum was photographed in the same manner, a feeble secondary spectrum was likewise obtained, consisting of rays wholly in the ultra-violet beyond the H and K lines of the spectrum. No such secondary spectrum was obtained without the current. It was therefore clear that this feeble secondary image of the sun and stars was due to ultra-violet light alone. We know that ultra-violet light is rich in electrical action, therefore I denominated these secondary images "electrical images." It was apparent that the electrical radiance from the sun and stars could be conveniently studied by this means.

My next step was to inquire what effect the electric current would have when focussed upon a photographic plate. A small two-volt battery was placed in a dark room, and focussed upon a sensitive plate exposed in a small camera with a lens of one inch aperture and six inches focal length. The battery was charged and the current

made to pass across the sensitive plate during an exposure of thirty minutes. The battery terminals and two carbon pencils which discharged a portion of the current were so arranged that their images might be recognised. As expected, the resultant photogram showed images of each terminal, the cathode being strongest actinically, but the anode being the more remarkable by reason of a series of coronal rays emanating therefrom. Similar radiations were traceable from the cathode and carbon points, but they were less pronounced (*Eng. Mech.*, vol. lviii., p 554). This is probably the first attempt ever made to photograph this new electrical radiance, and it is of great importance as showing that images of this cathodic and anodic radiance could be obtained in a camera by the help of the electric current, the current and its metallic conductor acting as a condenser by greatly intensifying the action of the electrical radiance. I urged the importance of further investigation into this remarkable research in my early papers, and I am confident that had my means permitted me to continue, the so-called "new photography" would have been at least two years old.

Further experiments were made by placing the sensitive film of a photographic plate in contact with the terminals of a small battery while in action. Starlike images, rays, etc., were found in development: those from the cathode being normal and sharply defined, those representing the anode being abnormal (reversed) and ill-defined. The phenomena varied according to the strength of the current, but they were constant for the same plate, and were generally greatly deflected from the point of contact. In the *Phil. Mag.* for 1888, Mr. E. Brown has given some beautiful photographic results obtained by the passage of electric currents across photographic plates in a paper which is well worthy of perusal.

To facilitate the passage of an electric current across a photographic plate, I employed a metallic plate, or sheet of tinfoil, connected to the wires of a battery and placed in contact with the film side of the plate, the plate being exposed with the film side away from the object. By a simple modification—reversing the process—I found, in 1895, that the current could be dispensed with, that the metallic plate or foil acted as a conductor and condenser to this electrical radiance, and that the screened photographic plate was affected through the metallic screen. Innumerable experiments were made, which all tended to show that metallic

media were relatively transparent to certain rays in sunlight, which excited an electrographic effect upon sensitive plates screened thereby, that this action was electro-chemical, and its appearance as regards the sun, coronal. This discovery has been successfully applied in photographing the solar corona.

The solar corona, as is well known, can only be observed and photographed by ordinary means during the brief moments of a total solar eclipse. Many efforts have been made from time to time to photograph it without an eclipse, but without success, the atmospheric glare surrounding the sun being far too strong, actinically, to permit the weaker coronal radiance from affecting a photographic plate. The corona has long been thought to be of an electrical nature, and it is known to be intimately associated with sunspot activity. It is also well-known that sunspots undergo very rapid and frequent changes during their passage across the solar disc, so that any coronal rays

gaseous and meteoric matter in a highly thermo-electric condition.

The inference that we are able by this method to photograph the sun's interior may at first appear surprising, yet it is the only one that will render the plates intelligible, and its admission will clear up several points that otherwise defy explanation. It is also abundantly verified by the evidence obtained. All the best negatives show the central nucleus distinctly. In a future note upon this matter, I hope to exhibit a series of these "sun interiors" enlarged from the original negatives.

I have the honor of submitting three specimens of the solar corona taken with a small pin hole camera, aperture $\frac{1}{16}$ th of an inch, depth five inches, the metallic screen employed being a common kind of tinfoil which largely consists of lead. Pure tinfoil is less useful, as it is more opaque to these rays. The central mask is intended to show the corona as it would have appeared had

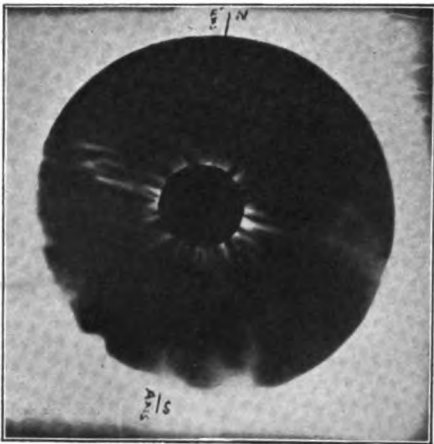


FIG. 1.

that might be associated with them should vary in a similar manner.

A complete discussion of all the negatives obtained show clearly the following phenomena:—

1. The existence of a central nucleus in the heart of the sun from which emanate a series of rays (the corona proper), whose position-angles agree precisely with those of the spot groups observed in transit at the time. This solar nucleus is probably of a magnetic nature, as iron screens alone fail to show any trace of its existence. Magnetic radiance, as is well known, will penetrate all forms of matter except iron, which absorbs it.

2. The coronal rays more or less numerous according to the number and activity of the sunspots.

3. The existence of enormous cosmic streams around the sun, evidently connected with the corona proper, but whose dimensions must be reckoned by millions of miles. These great cosmic streams have long been anticipated; their very existence is required to explain the coronal and spot appearances. They probably consist of

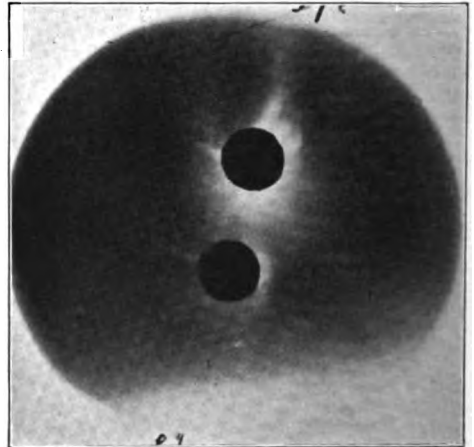


FIG. 2.

an eclipse occurred at the time of exposure. It also represents the apparent diameter (30°) of the sun or moon, thus affording a scale of measurement.

1. 1895, Aug. 27-28. 21h. 50m. G.T. 60 seconds exposure. Lantern plate. Shews a surprising amount of detail, especially over the eastern limits where a fine spot group was in process of formation. Enlarged 12.2 diameters. Another photogram was taken on the same date, in a camera of 4in. aperture, 24in. focal length. The same details were shown, but too dense for publication.

2. 1895, Sept. 21. oh. 55m. G.T. Two exposures on one plate, 60 and 20 seconds. Celluloid film. The most prominent features of the longer exposure is represented in the shorter, a proof of the objective reality of the phenomena. Enlarged six diameters. Five exposures were taken on this date; they all show the same details more or less distinctly.

3. 1895, September 25. 3h. om. G.T. Four minutes' exposure. Lantern plate. Enlarged 12.2 diameters.

Efforts have been made to photograph the solar spectrum by this new method. The results obtained have been so remarkable that a brief account will be of special interest. It was thought necessary in the first place to use an objective of very short focus and a prism of small dispersion to produce any appreciable effect. The one-inch lens, six-inch focal length and a prism of 30° was employed. These mounted together showed the sun's visible spectrum as a very intense line of light, $\frac{1}{4}$ inch in length. Photographic plates screened by metallic foil were used and exposures of several minutes given. On development two spectra were found; one, the normal spectrum consisting of rays comprising the whole visible and photographic spectrum; the other consisting of rays wholly in the ultra-violet region and separated from the normal spectrum by an inactive gap. This secondary spectrum, though less pronounced than the normal, exhibited some remarkable features, for,

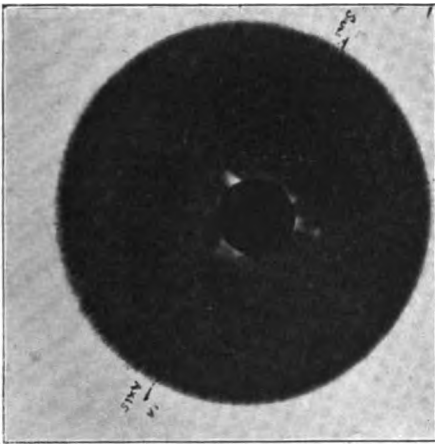


FIG. 3.

whereas, the one showed the usual dispersion in one direction, that of refraction, and resembled a band or line; the other showed an abnormal dispersion from an ill-defined centre in every direction, and resembled a circular haze. But the most astonishing feature remains to be told. By a fortunate accident a tree had partly interposed between the sun and camera, and its image was shown in the resulting photogram completely cutting off part of the normal spectrum, but showing the secondary spectrum *through the entire thickness of its trunk* (six inches). I had unconsciously obtained a shadowgram of the tree, a copy of which I send herewith. Further exposures confirmed these results and left no doubt in my mind that these rays constituting this secondary spectrum were similar, if not identical, with the "new" light that is just now profoundly interesting scientific investigators. This secondary spectrum is also identical with the secondary spectrum which I discovered in 1893, and to which I called the attention of the scientific world three years ago (see *Ante*). This

discovery opens up a very wide field of research; for it is evident that each metal must differ in its selective absorption and transparency to these rays. The next step will be to obtain a linear spectrum of these rays, whereby their wavelength, etc., may be conveniently studied.

The latest feature of the research is the important discovery that if a metallic plate, or even a sheet of clean glass, be exposed to the focussed image of the sun in a photographic camera for a few minutes, and immediately conveyed to a dark room and placed in contact with a photographic plate for an hour or two, an image of the coronal rays will be found on development. Curiously, if we use sheet copper, the image is formed at the back of the plate, but if tin, iron, lead, or zinc is used, the image is formed on the face exposed to the sun. The best results are obtained by exposing pairs of plates differing in their electrical conductivity, such as copper and zinc, copper and lead, &c. In such cases the image is formed on

d c b a



SOLAR SPECTRUM (SLITLESS).

(1896, Mar. 29. 3m. exp.)
 a b—Ordinary actinic spectrum, partly hid. by shadow of tree.
 c d—Ultra-violet electrical spectrum, radiating through tree.

the sides of the plates facing each other (behind the exposed and fronting the screened plate).

This new method was partly suggested to me by reading M. Niépce's remarkable experiments in which he discovered a new property of light (*Comptes Rendus*, 1857-58, many papers). This distinguished investigator found that if an engraving is exposed to sunlight for an hour or two and then laid upon a sheet of photographic paper in a dark room for a few minutes, a photographic impression of the engraving is produced on development. He also found that a sheet of cardboard, imbibed with a solution of tartaric acid or a salt of uranium, exposed to sunlight and then rolled in a cylinder and placed inside a tin tube, would retain this "invisible phosphorescence" for several months, and affect sensitive films almost as readily as when first exposed. This contrivance, invented and in use nearly forty years ago, wonderfully anticipated Salvioni's recent fluorescent tube or cryptoscope, and M. Niépce's "new property of light" was simply one of the many remarkable features of this new electrical radiance which is found in sunlight and can be produced by artificial means, and which is at present exciting the most profound inquiry amongst scientists throughout the world.

Beauty Spots.

IV.—Leeds and District.

By JOHN H. WALKER.



FOUNTAINS HALL.

By Godfrey Ringley.

but has no antiquities, and is almost void of beauty spots, but no better centre for photographic work exists. One item deserves mention. Leeds possesses the oldest photographic society in the empire. The Photo Convention of 1896 meets here, and its pleasure itinerary includes Bolton, Kirkstall, Adel, York, Ripon, Fountains, and Knaresborough.

BOLTON "ABBEY," or more strictly speaking, "Priory" (for it was Augustinian) with its surroundings, combines almost every type of beauty amateurs can desire. It is twenty-one miles from Leeds, by the Midland Railway, and belongs to the Duke of Devonshire, who kindly grants free admission, but the grounds are closed on Sundays. There are cheap fares by ordinary trains Mondays, Wednesdays and Saturdays for whole or half-days. The ruins stand in the Valley of the Wharfe, in a section bounded on the north by Barden Tower, and on the south by Bolton Bridge, which are four miles or so apart. There are stepping stones opposite the Abbey, one mile from Bolton Bridge, and a wooden bridge about a mile further. From the station the Abbey is $1\frac{1}{2}$ miles (fares by waggonette, 3d.; to the Wooden Bridge, 6d.; to the Strid, 9d.).

Enter at the "Hole in the Wall" and bear away to the right till you come to a stile by the riverside. Here are views like the third illustration. The nave of the Abbey has been restored and is used for worship, but the rest is in ruin. Wide angle lenses are necessary to take in the chancel walls and east window. Through the arch of the "Clifford Chantry," and through other openings, vistas of river, woodland, and Arcadia appear. The valley is all most picturesque: there are fresh beauties at every turn.

LEEDS is 185 miles from London by G. N. R. Best trains 9.45 (luncheon car 1st), and 1.30; time, three hours forty-eight minutes. By Midland it is 196 miles; time, four hours thirteen mins.; best train 2.10 (dining cars 1st and 3rd).

Members of Convention will find their "Headquarters" Hotel at the Midland Terminus in Leeds.

It is a big city of 400,000 souls, mercantile, mightily progressive, perhaps more so than any inland town in the kingdom. It is old,

The river is as varied as the scenery—here silent, dark in umbrageous shadow; there, a torrent forcing itself through a fissure in the rocks called the "Strid" (a fatal leaping place). At one place it is a brawling stream, fordable, at another a wide river flowing through pastures—a river of sudden changes in flood and drought, spasmodic, like "The River of Years."

Proceed through the churchyard to the Cavendish Memorial Fountain, and hard by is an arbour called "Lord Hartington's Seat," near which good views of the Abbey may be got, preferably in evening light. The path for nearly two miles lies near the river, through meadows and woodland to the "Strid," beyond which, high up the bank on the left, are views of the gorge in both directions. The "Strid" is a great attraction to amateurs, but the pictures are hardly ever satisfactory. It seems to need a double exposure. If you have sunlight to lighten the trees, the rocks glisten, and if the light is diffused, or grey, the exposure is too long for the water, or too short for the dark foliage.

Three-quarters of a mile further is BARDEN TOWER, built by the "Shepherd" Lord, Clifford, a hero of Flodden. This is an old feudal stronghold with a ruinous disreputable look, and one is



NORMAN DOORWAY, ADEL CHURCH.

By J. H. Middleton.

glad to get across the bridge and down the other side of the river. Here, after a mile or so, you come to many vantage points of view which are extremely charming and unequalled in this land. Every view has its own loveliness, with sometimes the Abbey and sometimes Barden Tower in the middle distance. Half a mile below the "Strid" a stile leads down to the water's edge, where is a meeting of divided streams. Good views are

obtained here up the river. After this keep down stream till you come to the stepping-stones.

From the cliff above, bird's-eye views of the Abbey can be got, but the foreground is unsatisfactory. Morning light best.

KIRKSTALL ABBEY, three miles from Leeds, on the Midland Railway, or by tram, is a Cistercian monastery, of 1153, ruined by time, and also (photographically) by the Leeds Corporation. Antiquarians rather like this spoiling of the picturesque, because of the interesting detail unearthed during the renovation. The morning lighting is favorable for E. SE. and S. views, but the West front is an afternoon picture.



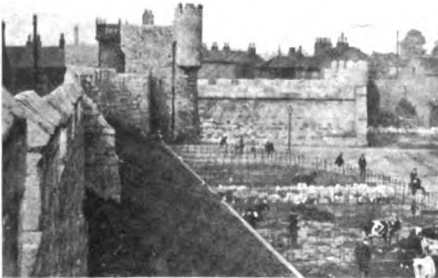
ON THE WHARFE.

By John H. Walker.



FOUNTAINS ABBEY, S.E.

By G. H. Rodwell.



WALMGATE BAR.

By W. Washington, Teasdale.



BOLTON ABBEY.

By Herbert Denison.

ADEL CHURCH, three miles by tram to Headingley, then a two miles' walk, is a Norman building with nave and chancel, and one of the most exquisitely beautiful porches in existence. (Adel was the "Burgodunum" of the Romans). The porch faces south, and a glint of sideways sunshine enhances the beauty of the ornamentation. The Convention is invited to visit Adel after the taking of the Group on July 15.

YORK.—It would be impossible to find a greater contrast than exists between Leeds and the capital city. The latter is at the other end of the historic and every other spectrum. A Roman city—frequented by Emperors from Adrian onwards, and English kings down to Jacobean times. An English city of gabled-timbered houses and curious

old-world streets, in the nooks and corners of which architectural amateurs find rich delight. A city with an Abbey, a Minster, a Castle and Royal Palace, walled, with postern gate and bars and barbican, and possessing a history old and eventful. Future history may record how, on the 16th July, 1896, Gen. H. P. Robinson appeared at the head of an army "before the walls of York."

The most striking object is the Minster, towering above the city, with nave and choir, both higher than any other English cathedral, while the building itself is longer than Canterbury, Lincoln, Durham, St. Paul's, or Westminster. Admission to the chancel, etc., is by ticket, 6d., obtainable at the Chapter Clerk's office, opposite the S. door. Members of Convention will have special permits. The glorious west front of the Minster is well lighted in the afternoon from High Petergate. The interior is strikingly vast, the view across the great transept being exceptionally fine.

The grounds of the Yorkshire Philosophical Society (free to Conventioners) contain much interesting camera work, Roman and otherwise, including the Multangular Tower, a portion of the Wall of Ancient York, "Eboracum," near the Hospitium of St. Mary's Abbey, and the Roman Museum therein. Of St. Mary's Abbey, the choir has all been vandalled away, but a large part of the N. wall of the nave remains "the wonder of modern

architects." The west front must have been remarkably fine. The Norman gateway remains and the Hospitium before named.

East of the Abbey a short cut (open to Conventioneers) leads to the Manor House. This was a palace of Henry VIII., James I., and Charles I., and has some rather fine doorways with royal insignia of James I. on one of them. This building is now the Wilberforce Blind School. There is a fine old mantelpiece in the dormitory. Then St. William's College, close to the Minster, affords specimens of old timber work. Clifford's Tower, at the junction of the rivers Ouse and Foss, is old Norman work (William I.).

The Bars are a feature of York. Petergate may be regarded as the Axis of the city leading from Bootham Bar on the west to Walmgate Bar on the east. Here is the only specimen of a barbican in England. The other bars are Micklegate and Monkgate; these latter are best in a forenoon.

The churches are numerous, two have good Norman doorways, viz., St. Margaret's, Walmgate, and St. Lawrence. From the walls innumerable good pictures can be obtained. Plates and dark-rooms: Mark Midgley, Stonegate; A. Yardley, 99 Nunnery Lane; T. Marshall Smith, 15 High Ousegate; and Baurley and Co., Minster Gates.

RIPON CATHEDRAL, 1154—1340, restored 1869. The west front is Early English, nave Early English to Perpendicular (no triforium), the choir decorated, with triforium, choir screen very fine. Stalls (rich tabernacle work) dated 1494. The interior of central tower is partly Norman.

Three miles from the Cathedral (two across the fields) you come to Studley Royal, the seat of the Marquis of Ripon, near which are the ruins of Fountains Abbey. From the lodge gates up the limes avenue you see the beautiful Church of St. Mary the Virgin. Past the lake is the entrance to the grounds. The admission is 1s., but the Marquis has kindly made it free to the Convention on July 17.

Go along Kendall's Walk and, surrounded by

art, and beneath nature's canopy of gigantic trees, pass to the left over the rustic bridge to "The Temple of Piety," then through a limestone tunnel and up the hill to the "Octagon Tower." Go further, beneath shadowing trees to "The Temple of Fame," and to a wooden hut where a surprising view of the Abbey bursts upon you. Passing down to the lake and on the bank of the river Skell you get a similar view of the Abbey nearer, and on higher ground following the path there is a bird's-eye view. Across the river is the Gatehouse and Fountains Hall, with its gables and mullioned windows.

At Fountains, the features are the massive nave with its Norman pillars, the lovely Early English architecture of the chancel, and the Nine Altars or Lady Chapel. This chapel is a tax on lens power. Note further—the great cloister 300ft. long, with its groined roof on twenty pillars; the Monk's Dormitory, the Cloister Court, the Buttery, the Refectory with its reader's gallery, the Chapter House and the glorious tower.

KNARESBOROUGH, twenty miles from Leeds N.E.R., is remarkable for its picturesque situation on the banks of the Nidd, in a deep ravine. The town is full of nooks and corners of ancient civilisation. The Castle, views from the Castle Cliff, St. Robert's Chapel, Eugene Aram's Cave, Mother Shipton's Home, and the Dropping Well. This petrifying water was, in 1626, described as being "very effectual in staying a flux of the body." I fancy it would!

The places enumerated in the foregoing article are those selected by the Convention, but there are many other beauty spots of smaller scope, such as Boroughbridge, Aldborough, Selby, Cawood, Towton, Pontefract, etc., all within easy reach of Leeds, without mentioning the glorious landscape scenery of the higher Yorkshire Dales and the Pennine Range—those grand hills of Wharfedale, Ingleboro and Pen-y-ghent—or that matchless sea-coast which can boast of Whitby, Runswick, and Robin Hood's Bay.

Architectural Notes for Photographers.

BY HAROLD BAKER.

Illustrated by OLIVER BAKER, R.E., A.R.C.A., etc.

Norman Architecture, or 11th and 12th Century Work.

UNTIL early in the present century the various styles of mediæval architecture were grouped together under the word "Gothic," which was used as a term of contempt; and it was not until Mr. Rickman made efforts to classify them into their true periods that their various dates were ascertained with any degree of accuracy. Mr. Rickman divided them into four periods, to each of which a distinguishing name was given:—1st, Norman; 2nd, Early English; 3rd, Decorated English, and 4th, Perpendicular English. These terms are generally used by architects and archaeologists, but a more convenient method, which, though not *strictly* exact (but sufficient for

practical purposes), is to divide them into the centuries during which each style mainly prevailed. I shall, therefore, adopt this latter method, and shall speak of Romanesque architecture as Norman; Early English as thirteenth century, Decorated as fourteenth century, and Perpendicular as fifteenth century. But it should always be remembered that these and several other attempts, which have been made to divide the architecture of the Middle Ages into styles and periods, have been suggested as aids to memory and to the acquisition of a knowledge of the subject, and are inexact, as each clearly marked variety only became so by a gradual though swift development. There was no pause,

but a continual advance to the next so-called style.

The change from Saxon to Anglo-Norman architecture had already commenced before the Conquest of England by William of Normandy, in 1066, for Edward the Confessor had brought many artificers from the Continent, and had commenced to build the Abbey of Westminster,



FIG. 12.—BERKLEY CASTLE.

which was consecrated only a few days before his death. There are only small traces of the original building left. As soon as the Conquest was accomplished, a great impetus was given to the building of castles and ecclesiastical edifices, as the richest estates and bishoprics were given to the followers of the Conqueror, and the



FIG. 13.—WHITCHURCH.

erection of castles, churches, etc., was soon commenced in the new style. But it must not be imagined that Norman architecture was introduced into this country ready made, for the Continental builders were not greatly in advance of the Saxons, and the development of architecture was going on over the greater part of Europe at the same time.

Probably the earliest buildings subsequent to 1066 were the "keeps" of castles, many of which remain, as at Berkley Castle, Gloucestershire (fig. 12). There are other good instances at Goodrich, Hereford; Ludlow, Salop; Kenilworth, Rochester,



FIG. 15.—BERKSWELL.

Clitheroe, Conisborough, and many others. Of the early Norman churches the chapel in the White Tower, Tower of London, is perhaps the best known, and certainly one of the finest. The plan is that of the old Roman "Basilica," or Hall of Justice; having a row of columns supporting the roof on each side, and a semi-circular recess at one end for the seat of the Tribune. The main parts of the White Tower are of the same date, 1081.

The chief characteristics of Early Norman work are the massive masonry with wide mortar joints, and large circular columns with plain capitals. Large masses of masonry were relied upon to give stability, and too little care was given to the



FIG. 16.—BERKSWELL.

foundation. The great strength of Norman castle keeps has been attributed to some of them having been built on Roman foundations.

It is not easy to distinguish between Early Norman and late Saxon work; but I think it is a safe rule to classify doorways with "nookshafts" and capitals as Norman. The example (fig. 13) is from Whitchurch, Warwicks. The rude carving of the "Angus Dei" should be noticed, as it was a favorite subject and is frequently met with. The narrow clinging buttresses in fig. 12, Berkley Castle, should be noticed, as they form a connecting link between the narrow projecting strips of stone in Saxon work, and the flat buttresses characteristic of Anglo-Norman.

The chancel of Berkswell Church (fig. 16) is a typical specimen of the Norman period. The east

wall has a group of three small windows instead of one large one, as became usual during the fourteenth century and afterwards; but many Norman chancels have only one small east window, as at Beaudesert, Warwicks; Heath Chapel, Salop; and many others. The stonework at the angles of the chancel at Berkswell (fig. 16) is worked into shafts with capitals and bases, a feature peculiar to this style, but not common. Another instance occurs at Twining, Gloucesters.; the row of "corbels," or brackets, showing on the south side of Berkswell, under the eaves, is another detail found in Norman work, but not

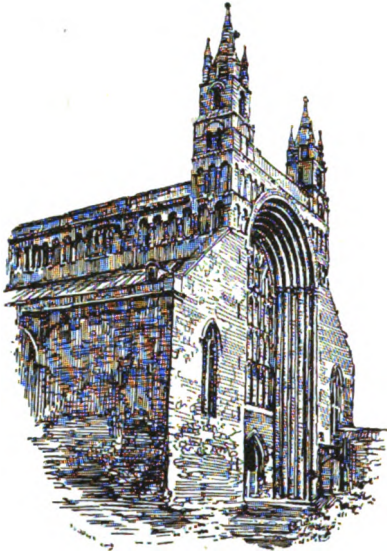


FIG. 17.—OVERBURY.

later than the thirteenth century. The square buttress on the north side is an addition at a comparatively late date.

As the style was developed, the large churches became more lofty, a row of windows called a "clere-story" being added above the pier-arches which separated the nave from the aisles. A good instance occurs at Overbury, Gloucesters, (fig. 17) where there is a row of small windows deeply splayed. They are now useless, as they are covered by the roofs of the aisles, which were raised in the fourteenth century. At Ledbury, Herefordshire, there is a row of similar windows, once forming a clere-story, but they are circular.

In important churches another story containing a gallery in the thickness of the wall (called the triforium or the blind-story), was built between the pier-arches and the clere-story, raising the latter still higher. From the top of this rose the semi-circular or "barrel" roof, which was generally of wood. These wooden roofs were frequently destroyed by fire, and I do not know of one still remaining.

Tewkesbury Abbey and Gloucester Cathedral have fine Norman naves of simple design, without enrichment, but at both buildings vaulted stone roofs were added at subsequent dates. At

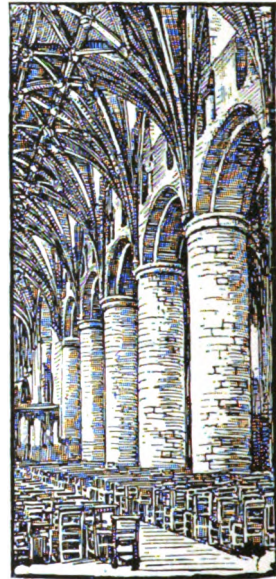


FIG. 18.—TEWKESBURY.

Tewkesbury, fig. (18) a very peculiar effect is produced by the "springers" of the fourteenth century stone vault being brought down to the capitals of the Norman piers, nearly hiding the triforium and clere-story. The great height of the piers is worthy of notice; those at Gloucester Cathedral are very similar, and the few traces of the nave of Pershore Abbey would lead one to imagine that the three naves were the work of the same hand; and as the date of Tewkesbury (1103 to 1121) is known, we are able to fix an approximate date to the others. There is also a fine Norman nave at Malvern Priory.

Principles of Stereoscopy.

By E. J. WALL, F.R.P.S.

FOR years we have been told that there has been a growing revival of stereoscopic work, and probably this is true. At the same time, there are many who fear to touch it because it is considered a lot of trouble and difficult to understand. Unfortunately authorities differ so much that it is no wonder that the tyro gets confused.

The ordinary form of stereoscopic camera is well known, but assuming that most of my readers have cameras, I need only say that any square bellows camera may be used, or any camera which will enable two lenses to be mounted on its front with about three inches between their centres. It is only necessary to provide an extensible partition in the camera, and this

can either be bought or home-made with a piece of stout black twill, with elastic run in top and bottom, and provided with hook which can catch on to little eyes fastened inside the lens front and to the camera back.

The question as to the best form of lens is a much debated point, some workers strongly recommending the use of single lenses, others as strongly affirming the necessity of doublets. Any distortion which may be caused by the single lens is certainly not noticeable in the stereoscope because the ordinary form distorts in the opposite direction. For choice I would recommend a pair of five inch single lenses, a pair of three inch doublets for wide angle work, and seven or eight inch single lenses for longer focus work.

The distance between the lens centres is another debatable point, some authorities stating that it must be the mean distance between the eyes, which is from $2\frac{1}{4}$ to $2\frac{3}{4}$ inches; whilst others as strongly uphold the placing of the lens central with the centre of the plate. The latter should be observed for anything over half-plate, whilst for this and smaller sizes we can hit the happy mean, and place the lenses so that their centres are just three inches apart.

The most convenient size of plate is certainly the true half plate, $6\frac{1}{2} \times 4\frac{1}{2}$. The proportions for a single picture are good, and two quarter-plates may be used at a pinch; there is also plenty of room for picking and choosing.

As we do not use the whole of the negative, it is just as well to mark out on the ground glass the exact size of print, and this is in width $2\frac{3}{4}$ inches, as shown in fig. 1, so that the desired subject shall fall within this measure. An instantaneous shutter is almost a *sine qua non*, anyhow the lens caps should be joined together, so as to enable them to be taken off simultaneously.

The great beauty of stereoscopic pictures is the sense of distance which is given, and to obtain this it is essential that there shall be some prominent objects in the foreground, a bit of tree, some stones, or even a railing or a fence is better than nothing; and in interiors, some chairs or a pillar. When we consider that on looking at a distant object the axes of the eyes are directed to that object so that imaginary lines drawn from the eyes to the object would form a triangle, the base of which would be the distance between the centres of the eyes, it will be readily seen that beyond about 230 yards objects are no longer seen in relief; but with stereo lenses and a disc of confusion permitted of not more than $\frac{1}{30}$ of an inch, this distance is reduced to about 35 yards with lenses of two-inch focus, and with four-inch lens to about 70 yards. It is advisable, therefore, always to remember this, and to so choose your point of view that some prominent objects are within ten yards of the camera, and for preference within five or six yards. Further, the more planes at varying distances you can include the better, although to place the camera on one side of a valley or gorge with one or two prominent objects in the foreground, and look across the valley to hills on the other side is most effective.

The ordinary rules of lighting for landscape work may be entirely thrown over, never mind

where the sun is with regard to the camera; except, of course, that it does not shine direct into the lens. All the rules as to massing of light and shade may be almost entirely disregarded for the beauty of stereoscopic picture is in the relief, and this makes up entirely for light and shade.

It is unnecessary to say anything as to the choice of plates except that not too slow a plate should be used, or at least it should be well exposed, for in stereoscopic work a thin soft negative is by far the best, and for this reason I prefer a more rapid plate, as it gives a longer range of gradation. This idea should be also kept in mind in developing, and development be not carried too far. Fuzzytines in the stereoscope are very painful, and perfection of definition is most desirable.

Stereoscopic photography opens up a very wide field of work of the most interesting kind, and it is astonishing that so little of it is done. I refer to stereograms of small objects like a little bit of old repoussé silver ware, a flower, stuffed birds, fruit, etc.; such stereograms are rarely met with and yet they are most effective and extremely entertaining. For such objects it is necessary to alter the distance between the lenses, reducing it in some cases as much as to two inches. The rule is to shift the lenses till the images are in the centre of the plates. Even stereoscopic portraits are within easy reach, and are wonderfully realistic.

I have now fairly well exhausted the elementary principles of stereoscopic negative making, there are only one or two minor points to treat of. Separate cameras may be used or a single camera shifted from one side to the other, and this method is necessary when objects at very great distances are required to be shown in relief and practically this was the method adopted by De La Rue to obtain stereograms of the moon, only he reversed the operation, and allowed the moon to move instead of the camera. For very near objects, and small, the axes of lenses may be inclined to the object and away from one another, and it is by this method with lenses of very short focus such as two inches and under, that the late Mr. J. Traill Taylor obtained stereograms of objects as small as a flea, etc. In every other case the axes of the lenses should be kept parallel.

Having obtained our negatives, the next process is to print the stereograms, and these may be either on glass or on paper. Paper stereograms are made in a printing frame in the ordinary way. It is advisable to use glossy surface chloride paper, although the matt papers are now of such fine surface that they look well in the stereoscope. The printing and toning should be carried further than usual. Over-printed and over-toned prints, which are far too heavy when viewed in the ordinary way, look well in the stereoscope, and a print slightly under printed will give the objectionable impression of snowiness, which is fatal to successful results.

Having printed and toned, we have now to consider the trimming and mounting of the prints, and this requires a little careful thought or else we shall very soon get wrong. To explain matters, let us assume we want to obtain a stereogram of such a subject as shown in fig. 2. On the ground glass (and on the negative, when the latter is held

upside down, film away from us, as it would be in the dark slide) it would present the appearance shown in fig. 3. A print from this would be represented by fig. 4, and as the right-hand picture must be viewed by the right eye, and the left-hand picture by the left eye, it is obvious that they must be cut and transposed. To ensure this it is advisable, after toning, washing and drying, to lay the print, face downwards, on the table and draw in the middle across the dividing line a short pencil mark, as shown in fig. 5. The print is now cut down the centre line and the prints turned so that the pencil marks come at the edges as in fig. 6. If this plan is followed mistakes cannot occur.

It is necessary, however, to trim the prints down, and how to do this properly necessitates a little explanation. One of the most charming effects of a stereogram is the idea that one is looking through an opening, a frame or window, at the solid objects, and this is only obtained by trimming the prints in a particular manner. In fig. 7 we have two little dots to represent the eyes, if we take the left-hand one first it is obvious that if we look through a frame we shall see more

sizes. A cutting shape is laid on the print, the base line passing through some prominent object in the foreground, such as a stone, &c. Then mount up your prints on cards, and the stereogram is finished.

The prints should never exceed $2\frac{3}{4}$ in. in width, but their height may be the full width of the plate, or it may be trimmed to suit the artistic taste of the operator. The prints may be square, dome-shaped, circular or oval; but squares or domes give generally the best results. The cards should always be dark in color; chocolate, green or black, and not light, as the former colors heighten the effect of looking through an aperture.

Whilst a paper stereogram is exceedingly beautiful when properly mounted, it cannot compare with a transparency. There are two methods of making transparencies: by contact printing or by copying in the camera. For large negatives the latter plan is of course preferable, and really presents no more difficulty than making a lantern slide by reduction. The ordinary stereo camera can be used, only the front bearing the lenses must be adjustable so that the centres of the lenses

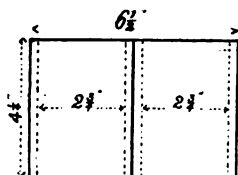


FIG. 1.

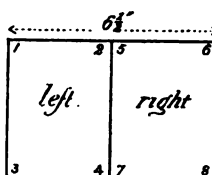


FIG. 2.

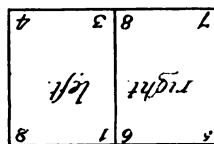


FIG. 3.

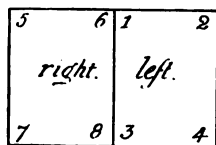


FIG. 4.

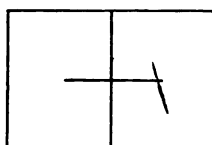


FIG. 5.

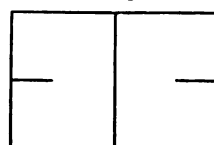


FIG. 6.

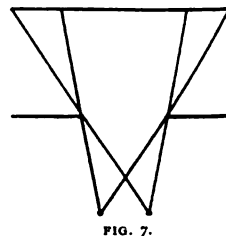


FIG. 7.

objects on the right than we shall on the left, because the frame (represented by the two short lines) will cut off some of the view on the left. The same thing happens with the right eye, as shown in the figure, where the lines proceed from the eyes to the picture. To obtain this effect we must trim our prints so that there is just a little more shown on the right of the left-hand print than on the right of the right-hand print; and a little more on the left of the right-hand print than there is on the left of the left-hand print. If we wish to see the picture with a frame behind it we must reverse this.

Mark and cut the prints as shown in figs. 5 & 6, and trim the prints so that one quarter of an inch more subject is included on the left of the right-hand print, and one quarter of an inch more subject is included on the right of the left-hand print. Mount the prints on cards with one quarter of an inch between them.

Proper cutting shapes for stereograms may be obtained from W. I. Chadwick, of Manchester, with different distances between their centres, namely $3\frac{1}{4}$, $3\frac{1}{2}$ and $3\frac{3}{4}$ inches. In many cases I prefer a less distance than this, using frequently $2\frac{1}{4}$ or $2\frac{3}{4}$ inches, but till experience is gained I should advise any beginner to stick to standard

may be brought nearer to one another than three inches, the normal working distance for negatives. The negative to be copied should be inserted in an aperture cut in the bottom of a card or wooden box, and a dark mount or piece of thin wood placed on the dividing line so as to project some distance from the negative, and thus prevent the one lens seeing more than one picture. The negative must be placed with its film side away from the lenses, that is, it must be copied through the glass, and it should also be placed upside down.

To the ground glass of the camera affix a stereo mount, adjusting the shape of the aperture to suit the composition of the picture. Take care also to adjust the view exactly as described for paper stereograms as regards the amount of subject, etc., and having focussed, hold a stereoscope at the proper distance from the screen, when you will at once see the view in relief, but of course as a negative instead of a positive; this is very valuable because it enables one to judge what the final picture will be like. It is hardly necessary to say anything as to the plates to be used, the ordinary lantern and transparency plates of the required size can be used. One advantage of copying in the camera is that it is merely necessary

to mount the finished transparency with the film in contact with a sheet of ground glass, for it to be ready for the stereoscope, as the transparency is viewed through the glass.

For contact printing, unless the transparency is cut and remounted afterwards in the proper position as regards right and left, it is necessary to use a special printing frame, and Mr. Chadwick has placed such frames on the market, which are 10½ in. long with a central aperture 2½ wide. The negative is first adjusted in this frame with the left side over the aperture, film side up, care being taken to note some prominent object in the foreground that is cut by the left side of the aperture, and then the plate is applied so that the centre of it is cut by the left edge of the aperture. After printing the negative is shifted, so that the right-hand negative is over the aperture. Adjusting it again by the prominent object in the foreground, the left-hand of the transparency plate is placed in

position and another exposure made. It is difficult to adjust the transparency plates without some guide, and Mr. Chadwick sells special cardboard guides for this purpose.

After printing and development the transparency is placed behind a suitable mask, protected by a cover glass, and unless ground glass transparency plates are used, a sheet of fine ground glass or matt celluloid should be placed behind it, and the whole bound up together.

The negatives can, of course, be cut in two and the halves transposed, which of course obviates any subsequent transposition of the prints or transparencies, but this is not a procedure I should recommend.

Stereoscopic work is not difficult, it requires a little care and system and experience, and when once mastered it is possible to obtain the finest reproductions of nature that are given by photography in monochrome.

Plain Salted Papers and How to Prepare them.

By G. H. Moss.

South London Photographic Society.

THE preparation by amateur photographers of rough and plain surface silver papers has always been considered an operation surrounded by difficulties and uncertainties, and for that reason has been undertaken by very few. Not being able to procure plain salted papers of various textures from the finest to the very roughest without considerable difficulty, and also when possible to do so, in larger quantities than were required for the work in hand, so that some portion of it deteriorated before the whole could be used, led me in the spring of 1894 to experiment with a view to the preparation at home.

The result has been the production of the following method, which will be found very simple, and if the instructions are carefully read and acted upon failure will be impossible.

My first essay was to sensitise drawing papers without using gelatine in the salting bath, as I did not consider it a good vehicle for holding silver salts when there is an excess of silver nitrate, owing to the latter readily combining with the gelatine and forming unstable compounds which add to the fading of the prints.

Gelatine is generally used in the salting of paper previous to sensitising to get vigor, and keep the photographic image from penetrating too far into the paper and causing a flat appearance of the finished print.

After considerable experimenting, I adopted the following formula for salting :—

Sodium chloride in crystals	150 grains
(Not table salt)	
Ammonium chloride	100 grains
Potassium bichromate	4 grains
Water to make	20 ounces.

Procure some drawing paper (Whatman's is one of the best) in the rough or smooth surface according to the effect desired, or if a finer

surface is required Rives or Saxe paper. Soak in the above bath for three to five minutes. Don't float, but have sufficient solution to well cover the whole of the paper, then hang up to dry.

In this state the paper will keep indefinitely, so that a quantity can be prepared and put aside and sensitised as required on the following bath :—

Silver nitrate	1 oz. (437½ grs.)
Citric acid	150 grs.
Distilled water to make	8½ ozs.

Float the paper on this bath for about two minutes. The thick drawing papers will generally have a tendency to curl up at the edges, but this can be remedied by breathing on the edges of the paper until it remains flat on the solution. I should advise trying the thinnest papers, such as Rives, first, as they are more easily floated and do not curl up. When success has been attained with them the thicker papers may then be tried.

The best way to float paper is to get hold of the upper right and lower left hand corners holding them upwards so that the middle of the paper touches the solution first, then gently lower the ends, and if properly done, all air bubbles which may form will be driven out. To ascertain whether that is so, lift up each corner, and if any bubbles are found on the paper, break them with a glass rod or a piece of vulcanite and then let the paper down on the bath again.

When sensitised, the surface of the paper will be a light primrose color, and if any air bubbles have formed through careless floating or grease, white patches will show where the paper is not sensitised. The primrose color on the surface is due to chromate of silver which is formed in the paper, as well as chloride and citrate of silver. The chromate of silver produces vigor in the finished prints.

Do not let your sensitising bath get reduced in

strength below fifty grains of silver to each ounce of solution for the thick or rough surface paper, and not below forty grains for the Rives or Saxe papers, as the chromate of silver will not form when your solution is under this strength, and you will not get the primrose color on the surface of the paper nor vigor in the prints.

An argentometer can be used for testing the strength of silver bath. It will not give exact results on account of the citrate in the solution, but I have found it answer quite nearly enough for all practical purposes.

If the sensitising bath becomes discolored by organic matter after using a short time, put it in the sun for a day; then all the impurities will be thrown down, and the bath will become quite clear and in good working order again.

A flat porcelain dish is the best for sensitising the paper, and it should not be used for anything else.

The paper is dried after sensitising, and it is necessary to print a little deeper than the result desired when finished. The paper can be toned in any bath, but my favorite is as follows:

Acetate of soda	30 grains
Gold chloride	1 "
Water to	8 ounces

After toning, rinse in three or four changes of water, and then fix in:

Hyposulphite of soda ..	1 ounce
Water to make	10 ounces

Ten minutes for Rives or thin papers. Twenty minutes for Whatman's or thick papers, and use a fresh bath for each lot of prints.

A considerable amount of control over your results can be obtained by modifying the salting bath. To print from a very weak and flat negative use more bichromate in the salting of your paper, say eight grains instead of four, which will give more vigor but slows the printing very much.

To print from a hard negative use less bichromate, and weaker prints will be obtained. By this means greater control is obtained, and if care and thought is exercised a fairly passable print can be obtained from almost any negative; which certainly cannot be said of any paper now on the market.

A very nice thick paper requiring no mounting is sold by the Autotype Co., which they call rough surface toned etching paper.

When prepared by the method described it is very effective, more particularly if printed with a margin of, say, two inches all round for a half-plate print and a plate-mark impressed, which can be easily done by putting the print in a letter-copying press between blotting paper, with a piece of zinc or iron the size of the plate-mark on top. Place a piece of tissue paper between print and plate, then screw down the press as tightly as possible, and leave them in for an hour, when a clear impression will remain on the print, and the result will look very much like a fine etching. Most good quality papers will sensitise without difficulty.

After fixing, wash the prints as follows. For thin papers, such as Rives', one hour. For the thick papers, such as Whatman's, two hours. The very thick (viz., such as that sold by the Autotype Co.) should be washed three hours to ensure the removal of the hyposulphite. Hot water can be used to get rid of the hyposulphite of soda quickly, without any ill effects on the prints. Any tone up to a warm black can be readily obtained, and the formula given is suitable for a negative such as would give a good print on P.O.P. Although no gelatine is used for sizing, the image is well on the surface, and the detail in the prints made on the smooth surface papers is equal to that obtained on the best gelatino-chloride paper in the market. The yellow appearance of the paper when sensitised disappears in the first washing water. After sensitising, the paper will keep for about a month to six weeks, and the salted indefinitely.

Fine tones well suited for woodland scenery can be obtained by simply fixing the print without toning, but it is necessary to wash them well in water for about ten minutes before placing them in the fixing bath, or sulphur toning will take place, which is due to the acid condition of the paper, and the high lights will appear yellow. The white will be quite pure if the print is properly washed before fixing. I have prints prepared in April, 1894, that are as perfect now as the day they were made.

In conclusion, I would ask all photographers who require a paper to suit every negative to give this process a trial, and the results obtained will, I am sure, far excel any that could be got on commercial papers.

Painters' Studies for Photographers.

THERE is little to be said about the two studies reproduced this month. The one we gave in our last issue gave rise to a protest which will be found in our correspondence column. Many of our readers tell us that they expect to find these studies exceedingly helpful, and we have been distinctly pleased at the favorable

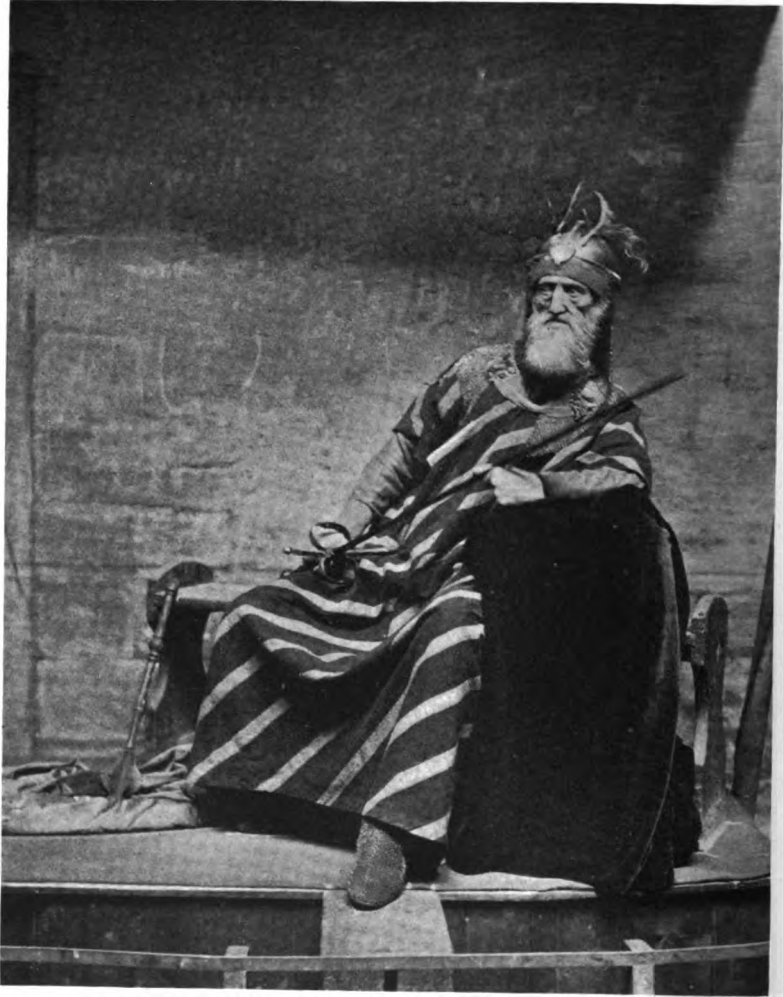
reception of the first of the series by the press. In future issues other well-known artists' models will be the sitters, and the whole style of the work will be varied as much as possible. Suggestions, comments, and criticisms will be very welcome, and shall find a place, as far as possible, in our pages.



THE ALCHEMIST.

Arranged by Mr. Crompton, at Heatherley's School.

Negative by Charles W. Gamble.



THE WARRIOR.

*Arranged by Mr. Crompton, at Heatherley's School.
Negative by Charles W. Gamble.*

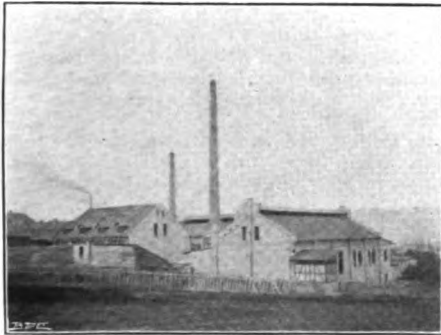
*Continental Optical Works.**IV.—Schott & Genossen, Jena.*

THE great improvements effected in photographic lenses and almost all other optical instruments during the last few years are, to a large extent, due to the numerous new kinds of glass placed at the disposal of opticians, by Schott and Genossen. The history of this firm is very interesting and is typical of the scientific way German manufactures have been raised to their present high state of excellence. In an account of the glass available for the construction of microscopic objectives, at an exhibition of scientific apparatus in London, in 1876, Professor Abbe came to the conclusion that no further improvements could be made in the objectives then constructed; until glass, the dispersion of which was proportional through the different sections of the spectrum, could be obtained. With the glass then obtainable the indistinctness due to the secondary spectrum could not be removed.

In 1881, Professor Abbe arranged with Dr. Friedrich Otto Schott, who, as son of a glass

crown and flint, by means of which it was first possible to remove the secondary spectrum and thus increase the clearness of the image. Besides the numerous kinds of optical glass several other useful forms are made; such as thermometer tubes, which are not so liable to change as the older forms, laboratory glass ware (beakers, etc.), and chimneys for the Welsbach Incandescent Gas-light, both of which are largely used, as they do not break when exposed to sudden changes of temperature. Tubes for water gauges or boilers, which consist of two strata of glass fused together, each of a different kind of glass, thus rendering them much stronger and less sensitive to changes of temperature, are also largely made.

On approaching the works I found building operations actively in progress. On applying at the office I was handed over to Herr Emil Grieshammer, the chemical adviser of the firm, who kindly took me over the buildings. We first saw the crucible workshop and store, which Dr. Schott kindly allowed me to photograph. The



SCHOTT'S WORKS—GENERAL VIEW.



SCHOTT'S WORKS.]

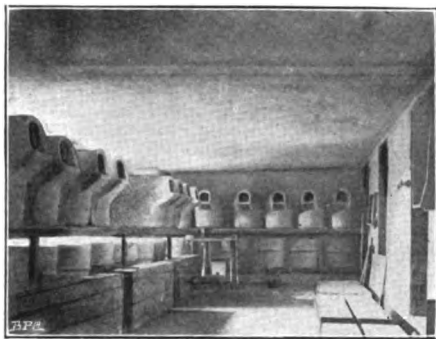
maker, and more especially as a chemist, was fully competent to undertake such work, to make experimental meltings of glass with various materials. The experiments were first made on a very small scale at Dr. Schott's home, at Witten, Westphalia, while Professor Abbe undertook the spectrometric examination of the glass thus produced. The results obtained were so promising that a year later a laboratory was built at Jena, and the experiments continued on a larger scale in order to bring them within the range of practical optics. In 1883 the problems in view were solved to such an extent that it was possible to devote more time to finding out how to turn the new kinds of glass obtained to account. In 1884 the firm of Schott and Genossen was formed, in order to place the new glass on the market. As the manufacture on a commercial scale required expensive experiments, the Prussian Government granted a subsidy of £3,000 towards the cost of same, and I do not think the money could have been better spent.

In addition to the usual crown and flint glass, the firm have devoted their attention to improved

crucibles shown had been made some time, and were hardening. Next we saw the furnaces, of which there are a large number. At the time of my visit they were all in process of reconstruction, except the one for making chimneys for incandescent gas burners, which I saw at work, many men being employed in that department alone. Nearly all the furnaces require reconstruction once a year on account of the great heat to which they are subjected. I should have liked to photograph the optical glass ovens, but the building they are in was too dark. Each furnace has an apparatus for mixing coal-gas and air by which the great heat is produced. They are all similar in principle, but differ in size and shape. Separate ones are used for making glass, re-melting, pressing into slabs and other shapes, in addition to tempering or annealing ovens. The latter process is very important, as on it depends the freedom from internal strains, the effects of which can only be compensated in the finished objective with the greatest care and skill. These tensions may be seen in most of the older telescope object glasses, by using two Nicol prisms,

when, if distortion is present, the black cross will appear displaced and irregular. Dr. Schott has given great attention to improvements in the annealing process, and when high optical qualities are desired does not use the old method of allowing the temperature of the red-hot glass to fall in a kiln completely enclosed by brickwork, which gradually transmits the heat stored up in it to the surrounding air. Instead of this he stores the glass in a vessel, the temperature of which can be accurately measured and subjected to a very slow and strictly uniform decrease.

Two kinds of pyrometers are in use, one is electrical, and the other consists of a reservoir of mercury inside the furnace, which is connected



SCHOTT'S WORKS—CRUCIBLE STORE ROOM.

with a glass tube which can be raised by a pulley to the top of the building, the temperature is read by observing at what height the mercury condenses on the glass tube.

The process of making silicate glass is as follows:—"The crucible is well dried, then gradually heated for four or five days till it is red hot, and is then placed in the melting oven, and after being brought to the melting point of glass, some broken pieces of glass are placed in it, which form a coating of glass inside the crucible. It is then filled with the raw materials, which, after being melted, are kept at a high temperature for six or eight hours. The glass is then stirred and after a portion has been tested by means of a tube, and has been found free from bubbles and impurities, the crucible is lifted out and left in the open air for half to three-quarters of an hour

to cool slightly, and then placed in the same cooling oven that has been used for heating the crucible for the next batch of glass. Here it is allowed to cool in three days, during which the glass breaks into many pieces. These pieces are broken still smaller and placed in moulds, mostly in the form of slabs. The moulds are heated until the glass begins to melt and take the shape of the mould, they are then allowed to cool, which process takes from ten to twelve days. The slabs are next taken to the grinding workshop where two opposite sides are polished to see if they are free from defects. The firm are satisfied if the good slabs come to 20 per cent. of the weight of the original contents of the crucible. Many lenses, prisms, etc., are cast in a similar manner, and save a lot of time in the subsequent grinding. Telescope objectives are treated in an even more careful way in order to avoid the possibility of any irregularity taking place during the cooling or annealing process.

After Herr Grieshammer had shown me the ovens and explained the way they are used he took me to the grinding department, where I saw the wonderful pieces of glass for the proposed gigantic Petzval portrait lens for astronomical work. These circular slabs of optical glass were actually over four feet in diameter. I learnt that about twenty of them had been cast, but some had snapped in two during the after processes. Very large grinding machines driven by steam power are used for grinding and polishing the slabs of glass. I then saw the store of glass ready for delivery. Most of it consisted of labelled slabs; there were also many large and small prisms in addition to the other kinds of glass already mentioned.

Herr Grieshammer then took me to Dr. Schott, with whom I had a pleasant interview. In his private room I saw the Nicol prisms arranged for testing telescope objectives and other pieces of glass for tension; also two pairs of spectacles, the glass in which has the property of absorbing heat rays. If I remember rightly the color of the glass was a pleasing light purple. I should imagine such glasses would be of considerable use in some occupations. Dr. Schott came with me while I took the photographs illustrating this description, and I cannot thank him and Herr Grieshammer enough for the time they gave me on a very hot afternoon.

About Patents.

WE have been urged to publish a complete list of the patents, designs, and trade-marks secured during each month for things photographic. The designs and trade-marks part seems quite impossible, but we trust the patents may be of interest to many. For the present we refrain from giving the long list of names and subjects that would be entailed if we dealt with the "applications," and give only those patents which have been completed and the specifications published. We are open to suggestions for improvements in our treatment of the subject.

The taking of a patent is not such a formidable task as is usually supposed, nor is the cost very great. The fee for provisional protection, for nine months is only £1 1s., and there is no necessity to employ a patent agent; though, as most of them charge only £3 3s. or £4 4s. (including the fee) for securing the provisional protection, this small additional sum is well worth spending for the advice of an experienced man, *if you can get it*. Unfortunately, some patent agents seem to take very little trouble in checking the actions of their clients. Even the best patent agent cannot be a specialist in every branch of human activity.

and therefore, unless you happen to find one who is personally interested in photography, or who has had several photographic cases in hand, it is probable that your own knowledge will be greater than his as regards the novelty of the device which you wish to patent. He can make a search through the patent records (a somewhat tedious and expensive process), but this will give no clue to the possible non-patented anticipations of your idea. On the point of novelty the advice of an old photographer, who has kept well in touch with his subject, is more useful than that of a patent agent can possibly be. In fact, the work of the agent should be mainly confined to the technicalities and formalities of the patent law itself; and possibly, to some financial arrangements as to the sale of the patent.

Specifications Published.

The particulars here given are from official sources, and in all cases the full specifications have been published or are on the eve of publication.

We will forward complete specifications of any patent, post free, for one shilling.

* Indicates that the patent is, or will be, described in brief, or illustrated, in our columns.

† Indicates that a model of the patented article, examples of its work, &c., may be seen in our reading room.

; Indicates that the patent is for sale.

ABRIDGMENTS OF SPECIFICATIONS RELATING TO PHOTOGRAPHY.

August 14th, 1839, to December 28th, 1859, price 2/-, post free 2/2.

January 9th, 1860, to December 31th, 1866, price 2/-, post free 2/12.

January 3rd, 1867, to December 31th, 1876, price 2/-, post free 2/12.

January 11th, 1877, to December 31st, 1883, price 1/-, post free 1/12.

Also an Appendix to unillustrated abridgments; class "Photography" from 1877 to 1883, price 1/-, post free 1/04.

14,880. *Optical Lanterns*. J. H. Barton, 111 New Bond Street, London. August 3rd, 1894.

15,217. *Enlarging Films*. The film of a gelatine negative is separated from the glass, &c., and enlarged by immersing it in a solution containing fluoride of sodium and citric acid, or similar substances. The film, after enlargement, may be intensified, and is used for printing from in the ordinary way. A. J. E. Hill, Palmer Crescent, Kingston-on-Thames; and A. A. Barratt, Cleygate Vicarage, Esher, both in Surrey.

15,471. *Lenses*. An arrangement for holding lenses or lenticular bottles on an adjustable arm. A. Sciascia, 194 Via Cavour, Rome.

15,559. *Camera (The Cyclograph)*, described in our issues of August and September, 1895. A. H. Smith, Riverbank, Putney, London. August 15th, 1894.

15,643. *Magic Lanterns*. Improved fronts and apparatus for registering the discs. J. Ains, 152 Farringdon Road, W.C. August 16th, 1894.

15,819. *Magic Lantern Slides*. Carrier with drop-scene effect. G. Davenport, 19 John Street, Adelphi, London. August 20th, 1894.

15,916. *Cutting Mounts*. Apparatus giving bevel edges and round corners. B. McHugh, 39 Slater Street, Ottawa, Canada. August 21st, 1894.

16,091. *An Instantaneous Camera*, shaped like a revolver. H. Smyth, 123 Lancaster Road, Notting Hill, London.

16,326. *Panoramas*. A series of magic lanterns mounted on a stationary or revolving platform, throw the scenes on to a polygonal or curved white screen. J. Train, Ayrshire House, Albert Road, Albert Park, Near Melbourne. August 27th, 1894.

16,410. *Plate changing arrangement*. J. Tascher, 518 West Chicago Avenue, Chicago. August 28th, 1894.

16,693. *Dry Plates*, coated on colored glass, &c. (Patent opposed.) E. de Coninck, 91 Maisons aux Aiguilles, Ghent, Belgium. September 1st, 1894.

16,811. *Photogram, &c., Stands*, rotating; and can be made to wear as brooches, watch-chains, &c. H. Gen, 1/c, Alte Jacobstrasse, Berlin. September 4th, 1894.

16,844. *Roller Blind Shutters*. W. O. Oehmke, 35 Dorotheenstrasse, Berlin. September 4th, 1894.

17,358. *Stands for Card, Photograms, and like*. A piece

of wire, &c., is bent to a semi-circle. E. Drechsler, 14 Langestr., Berlin. September 12th, 1894.

17,362. *Shutters*, in which the lens is variably shielded, while the size of the diaphragm aperture varies, so that each portion of the sensitised surface may receive a suitable proportion of light. C. D. Durnford, Elmhurst, Shooter's Hill, Kent. September 12th, 1894.

17,592. *Camera*, or dark chamber, in which "ferrotype" or like plates are exposed, developed and fixed before they leave it. H. J. Haddan, 18 Buckingham Street, Strand. September 15th, 1894.

17,658. *Photogram Frames*. F. A. Grimm, 8 Alsterdamm, Hamburg. September 17th, 1894.

17,688. *Exposure Record*. J. R. C. Gale, 3 Egmont Road, Sutton; and J. W. T. Cadett, Ashted, Surrey. September 18th, 1894.

17,758. *Color Photography*. A method of producing colored photograms by the superposition of three colored films printed separately from three negatives taken with colored screens. This utilises the principle used by Ducos du Hauron, Cros and others, in 1867, and by Ives since 1888. V. Mathieu, 51 Berwick Street, Oxford Street, Middlesex. September 18th, 1894.

17,785. *Reflector* (umbrella-shaped), for arc or other lamps. F. J. Borland, 2 Sheepscar Grove, Benson Street, Leeds. September 19th, 1894.

17,844. *Shutter*, of the diaphragm or iris type, the sectors of which rotate in one plane, and have narrow overlapping edges to cover the parallel slits which are formed between adjacent sectors in the middle of their swing. C. P. Goerz, 140 Hauptstrasse, Schöneberg, near Berlin; and E. A. R. Nerlich, 19 Zehdenickerstrasse, Berlin. Sept. 19th, 1894.

17,895. *Hand Camera*. A. H. Mitchell-Jones, 29 Grove Road, Stockwell. September 20th, 1894.

18,651. *Portfolio*, for temporarily binding together pattern cards, photograms, &c., in such a manner that any one can be readily removed. V. Dard, 56 Rue de Lancry, Chateau d'Eau, Paris. October 2nd, 1894.

19,329. *Shutters*, lenses and lens fittings. A. C. Jackson, 98a Amherst Road, Stoke Newington. October 11th, 1894.

19,509. *A Quadruple Lens* which may be used as a single lens, or as a component of a doublet. P. Rudolph, Carl-Zeiss Strasse, Jena, Saxe Weimar, Germany. Oct. 13th, 1894.

20,095. *Magic Lantern Carrier*. W. H. Tomkinson, 81 Dale Street, Liverpool. October 20th, 1894.

20,181. *Magic Lantern Carrier*. G. Davenport, 16 John Street, Adelphi, London. October 23rd, 1894.

20,303. *Mounts or Holders* for photograms, &c. R. G. Evans, 45 Lower Molesey Street, Manchester.

20,343. *Camera*, with an arrangement for transferring plates from the front to the back of the pile of plates after each exposure. A. J. Boulton, 323 High Holborn, Middlesex. October 24th, 1894.

20,358. *Photographic Printing Paper*. H. H. Lake, 45 Southampton Buildings, Middlesex. October 24th, 1894.

20,768. *Hand Camera*. A. J. Jones and S. J. Levi, 71 Farringdon Road, Holborn. October 30th, 1894.

20,864. *Photographic Printing Paper*. A. P. Negley, 96 Camden Road, London. October 31st, 1894.

21,406. *A Stereoscopic attachment*. T. Brown, Portland House, Fisherton, Salisbury. November 7th, 1894.

21,458. *Doublet Lens*. Improvements on a lens described in Specification 23,378, A.D. 1892. Each element of the doublet is made up of three lenses cemented together, and designed to correct spherical, chromatic, and astigmatic errors completely in each element. In the present invention one of the lenses in each element is transposed, so that the negative element is on the outside instead of being enclosed between two positives. C. P. Goerz, 7a Hauptstrasse, Schöneberg; and E. von Hoegh, 60 Prinzregentenstrasse, Wilmersdorf, both in Berlin. November 7th, 1894. Fig. IV.

21,573. *Exposure Indicator*. E. A. Whitby, Philpot Lane, London. November 9th, 1894.

22,013. *Solution Heater*, described and illustrated in our February, 1895, issue, page 42. C. E. Hearson, 5 Templar Street, Camberwell, Surrey. November 14th, 1894.

22,183. *Lamp for Generating Acetylene Gas*, described and illustrated in our January, 1896, issue, page 15. E. G. Gearing, Penhuist, Clarence Drive, Harrogate.

23,387. *Pressure Springs and Catches for Printing Frames*, described and illustrated in the present issue (see "Trade"). H. J. A. S. & G. A. Spratt, Tudor Works, Tudor Road, Hackney, London. December 3rd, 1894.

22,552. *A portable Developing Box*. E. Poulenc, 92 Rue Vielle du Temple, Paris. November 21st, 1894.

22,609. *Tripod Stands*. J. A. Priestwich, 744 High Road, Tottenham, London. November 22nd, 1894.

22,704. *Magic Lanterns*. The case forms an integral part of the lantern, for convenience of transit, &c. W. D. Askew, 26 Solon New Road, Clapham, London. November 23rd, 1894.

22,895. *Cameras*, similar to 22,896, but with bellows instead of draw-tubes. D. H. Houston, Hunter, North Dakota, U.S.A. November 26th, 1894.

22,896. * *Cameras*. D. H. Houston, Hunter, North Dakota, U.S.A. November 26th, 1894.

22,952. *Rocking Table run by a Water-wheel*. A. G. Adamson, 136 Buchanan Street, Glasgow. November 27th, 1894.

22,990. * *Producing and exhibiting Cycloramic Pictures*. T. W. Barber, 165 Queen Victoria Street, London. November 27th, 1894.

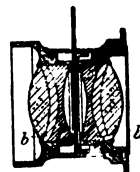
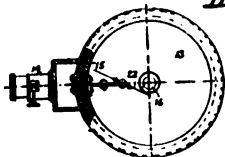
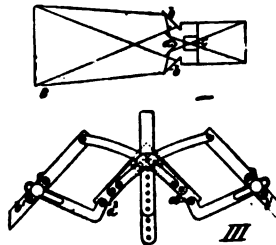
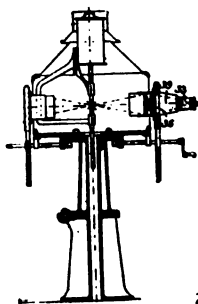
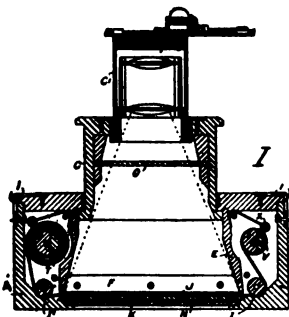
23,524. *Tension Spool for photographic films*. T. M. Clark, 1 Mount Vernon Terrace, Newton, Mass., U.S.A. December 4th, 1894.

24,085. *Pivots and Stays for swing-backs of cameras*. H. H. O'Farrell, c/o. Coutts and Co., 59 Strand, London. December 11th, 1894.

Watkins, Imperial Flour Mills, Hereford, December 22nd, 1894.

* *A Collapsible Hand-Camera*, of simple form, is described in D. H. Houston's claim. The diagram shows it in section, as consisting of (practically) a roll-holder with telescoping front and lens. Fig. I.

A Stereoscopic Attachment, by which stereoscopic pictures can be produced by a single lens camera. In fig. III. the arrangement of the mirrors is shown diagrammatically. The rays of light from the object *AB* are reflected from the two mirrors *bb* on to a pair of hinged central mirrors *a'*, and thence into the lens *C* of the camera. This has the effect of throwing two images of the object, taken at slightly different angles, on the sensitive plate, as in the ordinary two-lens photographic camera. The mirrors *a'* and *b'* are supported by a system of links, fig. II., which enable their



24,100. *Telescopic Dark Slide*. M. A. Stübel, 10 Feldgasse, Dresden, Germany. December 11th, 1894.

24,607. *Dark Slides* of the "American" or solid pattern, designed to render the holding of plates more efficient, and to facilitate their insertion and removal. J. E. Thornton and E. Pickard, Altrincham, near Manchester. December 18th, 1894.

24,655. *Magic Lanterns*, improvements in "demonstrating" lanterns, with open stage between condenser and lens; also in oxyhydrogen lamps for the magic lantern. F. Alston, 211 Ladypool Road, Sparkbrook, Birmingham. December 19th, 1894.

24,821. *Stereoscopic Projection* by two lanterns with complementary colored screens. The pictures viewed through colored spectacles. W. G. Grottendieck, 26 Laan van Meerdervoort, The Hague, Holland. December 20th, 1894.

24,910. *A Roller Blind Shutter*. H. L. C. Ausbittel, Chapel Road, Bexley Heath, London. December 21st, 1894.

24,999. *Watkins' Exposure Meter*, an instrument for calculating times of exposure on the principle of the slide rule, and having only one movable scale. The instrument is preferably made in the form of a watch. Described and illustrated in our June, 1895, issue, p. 147. Alfred

angles to be adjusted, and allow the whole to be folded up into a portable form when not in use.

A Cycloramic Camera, and a means of exhibiting the pictures obtained thereby, are claimed by T. W. Barber. Fig. II. represents the camera in section. 13 is a fixed cylinder, with film (15) stretched round it. 14 represents the lens and camera, which are on an outer cylinder, connecting with the inner one by a slit behind the lens, and revolving round the inner cylinder by means of a clock-work arrangement (22). The upper figure shows the arrangement for exhibiting slides made from such continuous film; shewing, however, only one of the lenses. The inventor points out that by using the continuous film only one lens need be used, which can be swung round the circle so rapidly as to give the effect of a continuous picture. This would be persistence of vision with a vengeance.

Current Topics

The R.P.S. Exhibition prospectuses and entry forms are now ready. Particulars under "Forthcoming Exhibitions."

Photography is preparing a gigantic memorial to the railway companies, petitioning them to reduce their fares to photographers. Everyone who can obtain three or four signatures should write for a copy of the petition form.

The Salon Prospectus is issued. Particulars under "Forthcoming Exhibitions." A new regulation that we welcome in the interests of

both the leading exhibitions is, that work submitted to "the other place" may be disqualified for the Salon.

It is with regret that we announce the death of James Charles Heaviside, who died on May 25th, age 72. Mr. Heaviside was for twenty-five years, the manager for the late J. H. Dallmeyer, also of his son and successor. The cause of his death was bronchitis, although he had for several years been suffering from indifferent health.

A Serious Fire broke out in the premises of C. C. Vevers, Leeds, about eight o'clock, Saturday, May 30th. The roof fell in and the upper portion of the premises was completely destroyed. The damage is estimated at over

£1,000, partially covered by insurance. Mr. Vevers says there will be no hindrance to business.

By an error last month we titled the photogram by John Beeby as Burns' Monument. It should have been Scott's Monument.

Competition No. 9.—Views in Yorkshire. We are again disappointed at the result of this competition. We expected this to be the best of the series of the "Beauty Spot" Competitions, as we know that Leeds has a very strong society, and we thought that the fact of the Convention being held there this year, would induce many of them to send in prints for our competition. Of the two best sets, it seemed impossible to place one before the other, so we put the money together and sent half to each of the winners, viz.:—Geo. Hepworth, 11 Bradford-street, Brighouse, and J. D. Hastings, Warkworth House, Tynemouth. We shall use one each of their studies next month.

Forthcoming Competitions.—We would remind our readers that our Competition No 10, the fifth of "Beauty Spots" series, closes on June 30th. Those who receive their magazine early will just have time to send off a set of pictures. The competition is for views in Warwickshire. The concluding competition is:—

No. 11.—Views in London (within seven miles of G.P.O.), closing July 30th.

SOCIETIES' PRIZES.

Present Scoring—	Society.	Points.
	Edinburgh Photographic Society... ..	3½
	(Won by Miss Christian H. Curle and C. P. Cameron.)	
	Liverpool Amateur Photographic Association... 2	
	(Won by Dr. John W. Ellis.)	
	Croydon Microscopical and Natural History (Photographic Section)	2
	(Won by Harry D. Gower.)	
	Société D'Etudes Photographiques	2
	(Won by A. Villain.)	
	Northern Counties Photographic Association ... 2	
	(Won by J. D. Hastings.)	
	Leeds Camera Club	½
	(Won by Morris May.)	

Exhibitions and Competitions.

These particulars are given when the Exhibition is first announced, and again when it is time for entries to close. The Secretaries' names are only given when the Exhibitions are open to receive work.

Name of Exhibition.	DATES.			Prizes.	Open Classes.	Special Notes.
	Entries.	Pictures.	Exhibition.			
1. Evening Times		July 17	Aug. 3 to 29	S.B.C.	11 A, 2 P.	Reserve right to reproduce any Photograms sent in.
2. Lille Photographic Salon			June 27 to July 18	Cm.	All	
3. Royal Photographic Society	Sept. 9	Sept. 10	Sept. 28 to Nov. 12	B.	Open Exhibn. No Classes.	
4. Salon		Sept. 14	Sept. 24 to Nov. 7		Open Exhibn. No Classes.	{ Pictures sent for exhibition to any other exhibition open in London at the same period liable to be disqualified. Work of pictorial merit only accepted.
5. Convention			July 13 to 18.			100 Pictorial Photograms selected by H. P. Robinson.
6. Mellin's Art Competition	Aug. 17		Jan. 4 to 9, 1897.	G.S.B. Cash and Goods.	4 A and P. 1 A only.	
7. Bristol Triennial	Nov. 1	Dec. 1	Dec. 14, 1896, to Jan. 23, 1897.		All.	
8. Gardening Illustrated Competition		Oct. 31		Cash (£92 16s.)	All.	Reserve right to reproduce unsuccessful works at 10/6 each.

Secretaries:—(1.) H. C. SHELLEY, Evening Times Office, Buchanan Street, Glasgow. (3.) R. CHILD BAYLEY, 12 Hanover Square, W.C. (4.) ALFRED MASKELL, Dudley Gallery, Piccadilly, W. (6.) Art Department, Mellin's Food Works, Peckham, S.E. (7.) M. LAVINGTON, 20 Berkeley Square, Clifton, Bristol. (8.) Editor, *Gardening Illustrated*, 37 Southampton Street, Covent Garden, W.C.

Judges:—(1.) GEO. MASON; HARRINGTON MANN; SIR FRANCIS POWELL, R.W.S. (2.) Jury of Acceptance. (3.) *Art Section*, F. P. CEMBRANO, JUN.; COL. J. GALE; B. W. LEADER, A.R.A.; G. A. STOREY, A.R.A.; W. L. WYLLIE, A.R.A. *Technical Section*, CAPTAIN W. de W. ABNEY, C.B.; CHAPMAN JONES, F.I.C.; ANDREW PRINGLE, F.R.M.S. (4.) General Committee, (6.) H. P. ROBINSON; REV. F. C. LAMBERT, M.A.; B. ALPIERI.

A—Amateur. P—Professional. G—Gold Medal. S—Silver Medal. B—Bronze Medal. C—Certificate.
Cm—Complimentary Medals given to every exhibitor whose work is hung.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

Elliott & Son, Barnet.
The Great Northern Railway Co., Ireland.
Walnot & Co., Glasgow.
G. W. Wilson & Co., Ltd., Aberdeen.
Vincent & Blaikley, Barbican.
Cadett & Neall, Ashstead.
The Blackfriars Photographic and Sensitising Co., Surrey Row, S.E.
T. H. Powell, 116 Denmark Hill, S.E.
The Surrey Manufacturing Co., Gravel Lane, S.E.
Oscar Scholzig, Dashwood House, E.C.

New Goods, &c., Advertised.

"Valnotine." *The New Developer.* Walnot & Co.
Notice to Tourists. Gt. Northern Railway Co. (Ireland).
Lantern Slide List. G. W. Wilson & Co., Ltd.
"Barnet" Plates, Films and Paper. Elliott & Son.
Photo-Engraving. Vincent & Blaikley.
The Cadett Plates. Cadett & Neall.
Portable Dark-Rooms and Sinks. The Blackfriars Photographic and Sensitising Co.
Powell's Compressed Developers. T. H. Powell.
The Mira Universal Studios. The Surrey Mfg. Co.
"Beernaert" Plates. Oscar Scholzig.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk () indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.*

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

"Tourist" Plates. For hand-camera and rapid exposures. W. H. Smith and Sons.

The Austin Edwards' Double Instantaneous Films. Austin Edwards, Willoughby-lane, Park, Tottenham. Quarter-plate, 2s. per dozen. Other sizes gradually increase in price to 15 x 12, 30s.

Vindobona Rembrandt Celloidin Papers, manufactured by Ferdinand Hedliczka, Vienna, VII. Schottenfeldgasse 80.

S.B. Printing Frame. June 3. Quarter-plate, 1s.; 5 by 4, 1s. 3d.; half-plate, 1s. 6d.; whole-plate, 2s. each. Marion and Co.

The Bessus Film Holder. May 30. Price: 6d. each. Airt and Co., 84, Hatton Garden, W.C.

Plate Separators. June 3. For two plates, 3s. per doz.; for four plates, 4s. per doz. Marion and Co., 22 and 23, Soho Square, W.

Perfect Developing Dish. June 3. Quarter-plate, 6d.; half-plate, 10d.; whole-plate, 1s. 6d. each. Marion and Co.

A Supply House for East Dulwich has been opened by S. and J. Withers, at 6 Townley Park Parade.

The Bessus Film Holder. May 28th. Price 6d. each. Airt and Co., 84 Hatton Garden, W.C.

The Albion Albumenising Co. has removed from Bath-street to 12b Sauchiehall Street, Glasgow.

A Focus Tube Stand, specially designed to carry the tube used in radiography, has been made by W. Watson and Sons, and placed on the market at 17s. 6d.

The Parastudio is a simple little apparatus; a combination of parasol and small tent for garden portraiture, designed by W. Watson, 130 West Graham Street, Glasgow.

An Exposing Box for radiography, introduced by Reynolds and Branson is a capital idea. It is made in 12 by 10 size, with a carrier for whole-plates; includes a box to hold the plates, and a stand which will hold the tube and its connecting wires from the coil.

A Film Holder to fit the pocket Kodak films, is offered by Airt and Co. It completely solves one of the difficulties of workers with that extremely handy little camera, and we can only now suggest that they should make an equally convenient holder to clip the films in lengths of, say, six exposures.

A Convertible Camera, excellent either for half-plate or stereoscopic work, has just been placed on the market (wholesale only) by Spratt Bros., of Hackney. With the reviving interest in stereoscopic photography, we may be sure that this will be found in the stocks and catalogues of most of our dealers.

We have tested the Elliott films, and find they work quickly, are developed with any ordinary developer, and fix in the usual time of good plates. They have no tendency to curl, and the results we have obtained leave little to be desired. Truly, the films of to-day are a long way ahead of those made two or three years ago. These films add new credit to that already won by this progressive firm.

The Double Instantaneous Films are sent us by Austin Edwards, their maker, for testing. It is recommended that the "Snap-shot" Developer be used, and we find it answers well, but with all such rapid plates and films it is well to restrain development. Our first trial was much over-exposed, but subsequent ones were very satisfactory. There is no question but that the light weight of films is their strongest reason for existence, and they have wonderfully improved since their first appearance. An excellent use for them is as transparencies to preserve duplicate negatives. The directions for films and developer are simple, and both should be of great value.

The "Tourist" Plates, mentioned last month, have had careful trial. Of the making of plates there would seem to be no end, and the variety ought to suit all tastes. This plate is exceedingly quick, is easily developed, and should prove very useful for its intended purpose. The makers recommend the following developer:—

No. 1.	No. 2.
Pyrogallic acid... 1 oz.	Carb. soda... 5 oz.
Pot. Brom. ... 50 grains.	Water to ... 50 oz.
Soda Sulphite ... 5 oz.	
Sulphuric acid... 10% sol. 4oz.	
Water to ... 50 oz.	

For use take equal quantities of each.

The Spectrum Plate in slow speed is already on the market. The advantage of this plate is that with a proper light-filter it gives a rendering of the whole of the spectrum in its proper tone value without any of the gaps that are found in ordinary spectrograms, even with the best orthochromatic plates. The difficulties in connection with the plate are very considerable. As it is sensitive to the whole scale of light, it is impossible for the makers to examine it by sight for defects. It is only possible, at present, to make it of very slow sensitiveness (about equal to the ordinary slow lantern plate) and it is practically necessary to develop in darkness. In spite of all these difficulties the makers have persevered in perfecting it, and hope that before long they will be able to greatly increase its sensitiveness. The value of such a plate for subjects in which perfect orthochromatic rendering is important, cannot possibly be over estimated.

Plates Sliding Round in the developer are a great nuisance when one is attempting to develop a number of plates in a single dish. To cure the trouble Marion and Co., have placed on the market a simple patent contrivance which will stand against the corners of two, four, or more plates, and prevent them injuring each other. Other



novelties from Marions include film carriers made of flat sheets of ebonite, coated on one side with an adhesive preparation; and a developing dish which is recessed at the bottom to take the plate exactly, so that the face of the plate is level with the bottom of the developer. This enables very small quantities of developer to be used if necessary, and

FIG. 1.

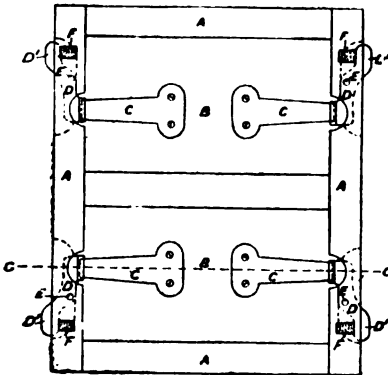


FIG. 2.



also prevents splashing, and the formation of air bubbles, which are liable to be caused by the liquid running over the edges of the plate when the tray is rocked under ordinary circumstances. Another line is the S.B. patent printing frame, in which special precautions are taken to prevent shifting of the print when opening or closing the frame.

Acetylene as an Illuminant for photographic enlarging and optical projection purposes, seems to be gaining ground. F. S. Thorn & Co., 169 Camberwell New Road, London, S.E., have placed an Acetylene Gas Generator on the market, and from what we have seen of it we think it should be popular with photographers.

The S. W. Röntgen Plates, made by the Sandell Works Co., are winning much favor, and seem suitable in every respect for radiography. We were puzzled, however, to know why they should be called "S. W." Röntgen plates, since the initials of the master of radiography are K. W. or C. W. (Konrad Wilhelm). A friend suggests that S. W. means "Sandell Works."

The Rembrandt Celloidin Paper comes from Vienna in three numbers, 1, 2 and 3, to be used according to the density of the negative in the order as given, the thinnest requiring No. 3. The maker urges deep printing, and gives full instructions in French, German and English, but the latter is calculated to decidedly bewilder the reader. One can hardly gather much information when told that the three papers "are destined for matrices designed as soft, till quite flau, so that they render but flau or quite useless impressions on ordinary celloidin paper." Also "For oversoft, thin, even entirely flau negatives thought often quite useless until

now, my new patented Rembrandt Celloidin papers serve best which are executed according principles hitherto unknown and give astonishing results, inasmuch as every negative even so much flau is to be copied thereby to a plastic picture with magnificent color-shade, without any difficulty." Notwithstanding the imperfect translation we can thoroughly recommend the paper, having given it a careful test, using our usual phosphate gold toning bath, instead of any of the several formulæ recommended. It is easily printed and tones evenly and readily, losing but little in the fixing bath. It should find much favor.

Walnotine appears to be a capital developer, though we have not yet tried it so fully as we wish. The sample bottle reached us just as we were making up for the press, and as we had no negative work in hand we tested it upon some bromide paper. With this it acts capitally, and our experience with plates shall be detailed next month.

CATALOGUES.

A PAMPHLET describing and giving instructions for using the Filmax Hand Camera, is just to hand.

THE twenty-second edition of Watson & Son's catalogue is now ready, and can be obtained post free for six stamps. It contains particulars of a full assortment of photographic goods, as well as the special lines of the firm.

RADIOGRAPHIC MATTERS are described in a new list from Reynolds and Branson, Leeds, and illustrated by an excellent print from one of their radiograms. Complete sets of apparatus from £8 8s. to £31 10s. are listed.

FROM THE KENSINGTON STORES, LIMITED, 64 to 74 Hammersmith Road, London, W., comes a very complete, well arranged, and carefully indexed list of over 150 pages, dealing with outdoor sports and photography. The outdoor sports occupy some 24 pages, while the rest of the space is monopolised by photographic matter.

EXCLUSIVE DESIGNS in rattan and oak studio furniture and continuous backgrounds, form the subject of a special list from Sweet Wallach and Co., Chicago. The rattan work is excellently calculated for the light and airy style of feminine portraiture that seems exceedingly fashionable in the States. Many of the backgrounds are thoroughly commendable.

THE GERYK PUMP (better known as the Fleuss) is fully described in a list just issued by the Pulsometer Engineering Co., Nine Elms Works, London, S.W., which is specially recommended for the exhaustion of vacuum tubes. As we have used this pump for some time in our demonstrations on radiography, and have travelled with it all over the country, we can speak as to its simplicity in use and non-liability to get out of order.

AUSTRALIA is evidently not to be behind if we are to judge by the large and handsome catalogue of 200 pages, issued by Harrington and Co., of King Street, Sydney. Drawing upon the Continental and the American markets more fully than British firms usually do, the catalogue has more variety of goods than is found in many of the British lists. The instructions for the various principal processes and miscellaneous information is very full and well arranged. It includes a table of customs duties on photographic supplies, which, fortunately, is one of the things not found in our home catalogues.

ANDREW H. BAIRD'S catalogue is well worth obtaining because, in addition to the many standard lines by various manufacturers, it lists a great number of exceedingly useful specialties made by Mr. Baird himself. Most of these have been noticed from time to time as they have been placed on the market, and are well known to our readers. In addition to those we have previously mentioned there is a very ingenious lever chemical balance, a portable syphon, a large collection of photo-chemical specialties, an economic complete outfit, and several other sundries. A spring focussing hood, to do away with the inconvenient focussing cloth, is a distinct boon, and this is offered, fitted to any existing camera, at a very reasonable price.

Professor Packer's article, in this issue, on the new astro-photography is a most important communication. It should lead to the investigation by many workers of the field thus opened. In connection therewith it may be well to read the chapter on thermography in Hunt's *Photography* as the two subjects might well be worked together.



1. "The Old Light and the New." By Wm. Ackroyd, F.I.C. Price 1s. 6d., post free, 1s. 8d. London: Chapman and Hall.

2. *The Camerist*, monthly. Annual subscription, \$1.25 (5s. 6d.). Kalmazoo, Mich.: The Camerist Co.

3. "Traité de Photographie Industrielle." By Charles Fery and Dr. A. Buraïs. Price, 5 francs. Paris: Gauthier-Villars et Fils, 55 Quai des Grands, Augustins.

4. "Les Petits Problèmes du Photographe." By E. Wallon. Price 1 franc, 25 centimes. Paris: Georges Carré, 3 Rue Racine.

5. "Das Nasse Collodionverfahren." By Dr. J. M. Eder. Published by Wilhelm Knapp, Halle, A/S. Price 4s.

6. "Künstlerische Photographie." By J. Raphaels. Published by E. Liesegang, Düsseldorf. Price 1s. 6d.

7. "Anleitung zum Photographiren." By J. Reiss. Published by E. Liesegang, Düsseldorf. Price 1s.

8. "Die Behandlung der für den Auscopir-Process bestimmten Emulsions-Papiere." By E. Valenta. Published by Wilhelm Knapp, Halle, A/S. Price 6s.

9. "Die Photographische Retouche." By G. Mercator. Published by Wilhelm Knapp, Halle, A/S. Price 2s. 6d.

10. "Die Chromolithographie." By Friedrich Hesse. Published by Wilhelm Knapp, Halle, A/S. Price 1s. 6d.

11. "Views of St. Albans." Price 1s., post free 1s. 1d. Fred. Downer, 110 High St., Watford, Herts.

12. "Archives of Clinical Skiagraphy." By Sydney Rowland, B.A. Price 4s. nett. London: The Rebman Publishing Co., Ltd., 11 Adam Street, Strand.

The Irish Tourist Development Co., Limited, is vigorously pushing the claims of Ireland for photographers and others. The magazine, *The Irish Tourist*, is published at the offices, 24a Nassau Street.

The Photographic News is to be congratulated on the series of "Lessons on Retouching" by Arthur Hands. His illustrations to No. 6 are capital, and should lead his readers to intelligently study the face.

The Prize Competitions in *Hearth and Home* seem to be wonderfully successful. No. 51 has just been completed, and has brought forward a lot of capital work, especially some by hitherto unknown lady workers.

Our Illustrations this month are chiefly from blocks by W. H. Ward and Co., Ltd., Holbein House, Shaftesbury Avenue, London, W.C. This firm has commenced business within the last few months, in premises elaborately fitted on American lines, and relies for its success upon the high quality of its work.

An Album, containing twenty-eight examples of the best works at the Belgium Exhibition of Photography, is announced. The subscription price is ten francs, or, for an edition on Japan paper, twenty-five francs, and the publisher is Emile Bruylant, 67 Rue de la Regence, Brussels.

"**The Cosmopolitan**" for May has two articles that will be of special interest to those who find our "Painters' Studies" of use to them. The first is entitled "Some Types of Artists' Models," by Katharine Ryle; the other is "Art in Photography and Photographic Models," by A. Van B. Berg.

The Carbon Colors used by Thomas Illingworth and Co., of Willenden Junction, are illustrated in a packet of eleven dainty little prints, which they are prepared to send to any of their customers. These are bound up with a list of prices, and are handy for reference when selecting the colors in ordering carbon prints or enlargements.

Copyright.—The publishers of "Ben Hur" claim (under the American law) both literary and dramatic copyright in the story, and hold that the preparation of a set of original designs and their sale in lantern slide form is an infringement of dramatisation rights. Such a set has been prepared by Riley Bros., of Bradford and New York, and the proprietors of the copyright claim £2,000 damages.

Northern Sweden is very attractively illustrated in the latest guide (No. 13) issued by the Swedish Tourist Club. It deals with a river voyage through Northern Sweden; is written in English, and although no mention is made of price, we believe that it is supplied gratis by the Association to those who intend visiting the country. The commissioners are Wahlstrom and Widstrand, Stockholm.

The Pharmaceutical Society has just been presented with a complete set of photograms of its premises, about which its journal speaks very enthusiastically. The prints are from negatives by J. T. Sandell, taken on the Sandell plates, and we understand that the pictures have been so much appreciated that the Sandell Works Co., has been induced to arrange for their publication in the form of a colotype album.

Home Competition is very well represented by a capital 1s. album of views of St. Albans (11). There are a dozen excellent half-tones from negatives and blocks by Fredk. Downer, of Watford. These, printed by Raithby Lawrence and Co., are infinitely superior to the lithographic or leporello albums "made in Germany," and Mr. Downer, who is the publisher of the book, will surely have a good return for his enterprise.

The Old Light and the New (1) is the title of an interesting exposition of the chemistry of color, arranged with a view to throwing light upon the nature of the X-rays. The writer, William Ackroyd, F.I.C., is evidently of opinion that the X-rays are light rays, and belong to the ultra-violet. The book is divided into three chapters, the first of which deals with the physics of light, the second is devoted to the chemistry of color, and the third to the new photography.

Sydney Rowland's radiographic work is well known through his connection with the special commission of *The Lancet*, and no doubt many surgeons will be glad to have the five plates of surgical subjects which are published in the first issue of *Clinical Skiagraphy* (12). They include a complete skeleton of the head, body and arms of a child three months old, and several other examples that are specially interesting to surgeons. There is also an introduction which gives brief directions for the practice of radiography.

We much regret that the summer season is affecting our sales just as it did last year. May and June shew a decline, so we have decreased our issue this month by five hundred. We rely upon our friends to pull this up again; and would suggest that those who wish to have complete sets should order their dealers to reserve copies even during holiday times. We cannot print a large number on speculation, trusting that the back issues will be ordered on return from holidays.

The Convention Programme, Leeds Meeting, shows that the conveners are prepared for a thoroughly good time. They will visit the places mentioned in our "Beauty Spots" article, and will have papers on "The fixing and washing of prints," by A. Haddon; on "Orthochromatic Photography," by C. H. Bothamley; and "Photography at the Seaside," by Frank M. Sutcliffe. There will also be demonstrations of photogravure, three-color photography, and radiography. The programme is illustrated by three bromide prints contributed by the Eastman Co. and Wellington and Ward, and also by a half-tone print by G. W. Wilson and Co., Ltd.

A Treatise on Industrial Photography, Theoretical and Practical (3), by Charles Fery and Dr. A. Burais, two eminent French scientists, has just reached us from Paris. The volume comprises over three hundred pages, and the authors have gathered together in convenient form a vast amount of information. It is put into clear, concise language, carefully paragraphed, and illustrated by a number of woodcuts and half-tones. The part treating of lens manufacture and testing is especially good, and the subject of photo-mechanical work is given great importance, the writers considering, as stated in the preface, that therein lies the future of photography. The book should be translated for the benefit of many English workers who are not able to consult more elaborate works, and who can gain from it many valuable suggestions and much practical knowledge.

"Les Petits Problemes du Photographe," (4) by E. Wallon, is a small pamphlet of seventy pages from the library of the *Photo-Gazette*. The author deals with his subject in a clear, concise fashion, giving in each case a brief statement of the special problem, then an example to illustrate it, and after that, such explanation as is required. While not, perhaps, as simply expressed as beginners might need, it should be of great value to those who have attained some degree of proficiency, especially with enlargements, and should be carefully studied. It can hardly fail to be of help to all who really desire to ground themselves in photography, and build their foundations sure. The author, being French, uses the metric system, but that should deter no one from being aided by his briefly expressed but practical teachings. If translated into English, the English equivalents of weights and measures could be given, and the book would then be invaluable to the student unable to procure or readily understand more elaborate treatises.

A New Line in photographic journalism seemed impossible, but *The Camerist* (2), which takes as its sub-title "An up-to-date magazine of Photography," has succeeded in striking a new line, and one which promises to be interesting. On the first page of advertisements it offers prizes to the amount of \$250 for the three best stories of love, romance, and photography. It has for frontispiece a good photogravure of a seascape by Charles A. Pancoast; its first article is a story by Adelaide Skeel, and its other principal matters are "Photography as a Pastime," by Dr. Hugo Erichsen; "A Camera among the Wilds," by George Macdougall; and "The Making of a Picture," by Pratique. Dr. Erichsen's illustrations are bad from an artistic point of view, and one or two of the other blocks are not so good as we would have liked, but some of them, on the other hand, are excellent. The Rev. F. C. Lambert contributes a very good "London Letter," and the news of the month is collected under various headings. The editor leans to the use of the word "photogram" in place of "photograph" as a noun, but has not succeeded in being consistent in every case.

Six German Books. In continuation of the valuable and complete handbook which is being revised by Dr. Eder (5) we have now that portion dealing with the wet collodion process, and its application to ferrotype and allied processes, and for the preparation of line negatives for zincography. Like all the works emanating from the pen of this author, this deals most exhaustively with the whole subject from the preparation of the pyroxylin to the finished negatives. That part dealing with half-tone work was published in our issue for May, 1895.

Die Chromolithographie, by F. R. Hesse (10), promises to be the most exhaustive and valuable book on the subject yet written, and as the author has been for eight years the manager of the lithographic department of the Imperial State printing works at Vienna, it may be assumed that the information will be authoritative and up-to-date. It is to be published in ten parts, five of which will be devoted to photo-lithographic methods.

For all those who wish to prepare and learn how to work the printing out emulsion papers, such as gelatino-chloride and collodio-chloride, no better handbook can be found than that (8) just issued by Knapp. The author is so well known as one of the best chemists connected with the Photographic Institute at Vienna, that the information given, we may be sure, is complete and reliable.

"Mercator's Work on Retouching" (9) is thoroughly up-to-date, and includes instructions as to the use of the air brush, electric and pneumatic retouching devices, as well as a valuable chapter upon coloring prints, to which we shall refer later.

"Raphael's Artistic Photography" (6) not only treats of art principles, but also of the necessary manipulations required to obtain good results by technical manipulation. The small booklet by Riess (7) is a simply written practical handbook for the beginner.



Be Brief!—We reserve the right of condensing all correspondence, but undertake to leave the meaning intact. Personalities barred. Whenever a man is attacked by name, we wait until a proof can be sent, and the attack and reply published together.

Anonymous letters are strongly objected to, and those which are not accompanied by name and address of writer, for our own information, go into the W.P.B.

An Appeal to Assistants.

John A. Randall writes an eloquent appeal to photographic assistants to combine for mutual help and protection by joining the National Union of Shop Assistants. The secretary of the Union will give all particulars to those who apply to him—James Macpherson, 55 and 56 Chancery Lane, London. Mr. Randall's address is 18 Canbury Park Road, Kingston-on-Thames, and the full text of his letter will be found in our weekly contemporaries of about May 20th.

A Correction.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—May I correct the final sentence of my article on page 138, which should read: "Work which it is his duty—but not always his pleasure—to write about."

As it stands it is either a singularly weak paradox or an insult. May I also add (and it is not quite irrelevant) that the gossip in "Criticism by Outsiders," written some months ago, was corrected (?) by a friend during my short absence in Paris, with the result that several sentences have become twisted, by Time, and a kindly reviser, to meanings not theirs originally.—Fai:hfully yours,

May 27, 1896.

GLEESON WHITE.

Painters' Studies.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—What have I done that you should have put such terrible words as I read at the top of page 136 of the June number of *The Photogram* into my mouth? I have looked carefully through my Camera Club Conference paper, but cannot find any ground for your assertion that "I said that there were only four portrait photographers in Britain who could fairly be called artists." In the first place I do not consider it any honor to a photographer to call him an artist, certainly I should not presume to dub Mr. Crooke, Mr. Craig Annan, Mr. H. H. Hay Cameron, or Mr. Hollyer with that ambiguous title when they are content to be called photographers. In my paper I only made use of the word artist once when I remarked that the "photographer was generally too much of a tradesman and not sufficiently an artist." In the course of the paper I did express my admiration for the work of the four gentlemen above-mentioned, but I did not string their names together as you have done, neither did I "state," nor imply by not mentioning every other photographer who was aiming at pictorial rather than commercial success, that the above quartet were the only workers who "could fairly (why fairly?) be called artists."

I feel that this explanation is due to every honest photographer who does not allow the whims of his customers to overrule his own endeavor to raise portrait photography from a commercial pursuit to something higher, call it picture-making, fine art, or what you like: may all those honest photographers forgive you for your little mistake as freely as does—Your obedient servant,

FRANK M. SUTCLIFFE.

who knows too well that life is made up of mistakes. Royal Oak Day, 1896.

By the way, is not the illustration to your article, "Painters' Studies for Photographers," something of a fraud? And should not the title be "J. McNab Pretending to be an Alchemist"? Of course, such gifted mortals as artists will be able to understand the picture, but as a common photographer, I feel inclined to ask Mr. McNab a lot of questions. Firstly, does he know that the Gothic background with an ugly crease in the centre never will look like the interior of an alchemist's cell if he sits there till Doomsday? With such backgrounds as that, it is not

astonishing that things did not turn to gold as they were expected to. Then, is not there a danger of Mr. McNab breaking his leg from a sudden inspiration seizes him, and he jumps up from his seat. Then, what would Mr. McNab's missus say if he spilt his decoction on the Sunday table cloth? And where is the rest of the Queen's reading lamp on the table? And where he had been going to, or coming from, when he got his ermine cloak so wet that he had to hang it over the end of the table to dry? I thought only children played at "make believes." For a man of Mr. McNab's years, the situation you have photographed him in is hardly compatible with the dignity one would have expected from his grey hairs.—F.M.S.

[Re the accuracy of our statement about the four photographers, we can only rely upon the statement of our reporter, which, curiously enough, was confirmed by a member of the Camera Club, who called upon us the morning after the paper, and who referred to the statement re the four photographers, and a statement by a painter-artist who was present, as the two striking points of the evening. Evidently Mr. Sutcliffe was misunderstood, but we regret that he should have been misrepresented by us.—F.D.S.]

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—In reply to your letter with enclosure. While regretting that the susceptibilities of any individual photographer should be in the slightest degree wounded by any remarks in the article, I have no desire to enter into any controversy with regard to it. As a matter of fact, had I known that you intended to give a title to the "set" photographed, I should have suggested the undesirability of doing so. Each model is posed with a view to composition, color, etc., and the students themselves supply such a title as seems to them in harmony with their work. Your correspondent's remarks shew an absence of knowledge of the "properties" employed, but he is evidently taking up the cudgels on behalf of the photographers, being probably hurt by something in the article.

Very faithfully yours,

JOHN CROMPTON.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—I thank you for sending me the eccentric and thoughtless hypercritical observations of your correspondent. I do not think one need seriously argue about the matter. If intended humorously, it seems quite worthy of a place beside Mrs. Caudle's lectures in *Punch*, but if intended seriously, I think it is contemptible, or beneath contempt. But after all, your correspondent, in his haste, forgets that the figure is the thing on which the portrait art-student essentially devotes his strength. Mr. Sutcliffe does not appear to understand this in his superficial and erratic remarks. But why does he pour the phial of his wrath so erroneously on my innocent head? I must enlighten him by stating that I am only responsible for personally sitting in the painter's study referred to and for nothing else, and the wild conclusions he has hurriedly jumped to are baseless. However, I may observe, although it is opposed to his ideas of art, that I quite agree with the article in your magazine, and the extracts you give from *The Publishers' Circular*, which, I feel certain, all true portrait artists will endorse, and that the position of an ordinary mechanical photographer, which Mr. Sutcliffe so grandiloquently defends, cannot be compared to, or hold the same high technical place in art as a photographer who combines the profession and knowledge of a painter with his art. But enough of this.—Yours faithfully,

J. MACNAB.

*. Several communications and notes are unavoidably held over.

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THE PHOTOGRAM

VOL. III.

AUGUST, 1896.

No. 32.

Copyright.—This Magazine, as a whole, with its contents, both literary and pictorial, is copyright; and the copyright is registered. Our contemporaries are very welcome to quote from our pages (with acknowledgment), but we propose to protect ourselves and our advertisers against piracy.

Painters' Studies for Photographers.

No. III.

IT is almost unnecessary to explain that the painters' studies we are reproducing are simply studies. They do not profess to be finished pictures, but simply studies of pose and costume, arranged for the use of painters, and useful to photographers engaged in figure work simply by virtue of the suggestions they embody.

This month we have a study of a female figure, a graceful young model who is sitting for the life class at the Birkbeck school of art. Mr. Mason, the art master, fully agrees with Mr. Crompton, as quoted in our June issue, that the photographer who would do really fine figure work must take a practical course in drawing, in order to cultivate his observation and to learn the artistic principles of pose, lighting and drapery. Mr. Mason kindly gave us every assistance in the arranging of this study, and also of another—"A Yeoman of the Guard"—which we propose to reproduce next month. In the Birkbeck school a great deal of good work is being done, not only on the various indoor subjects, but also in a landscape class, which Mr. Mason conducts to suburban beauty spots for the study of nature. Our studies were arranged by Mr. Mason and the assistant-master, Mr. Pocock.

Some interesting notes on artist's models are given in a recent issue of *The Cosmopolitan*. Eric Pape, who evidently respects professional models as a class, has a specially interesting article. He says that when difficult poses are attempted, it is often an advantage to photograph them, and that in such cases the model's charge is double. Even then the model feels that photography is rather an unfair competitor, for it very considerably cuts down what might otherwise be a good engagement. Some of the models are men or women of small means, but with artistic tastes and anxious to become artists, who find in posing for others a means of earning money enough to pay for their own education.

A. Van B. Berg, writing in the same issue of the same journal on models for photography, says:—

"Some types of face lend themselves to the lens more readily than others, and there are several characteristics that are much sought for by artists. The ideal model is a youthful girl, with a proportionately small head, a round face, small, regular features, and a waxy whiteness of skin insuring a pleasing profile, and a good figure.

"Unless the model be young and plump, the best lighting and the finest lens must be resorted to, with retouching of the negative as a positive necessity. Where retouching is objected to, and it should be avoided, youth becomes almost a primary consideration. The model must also be far from thin, with no suggestions of hollows in the face or of collar-bones, for the camera seems to accentuate such defects. The proportions of the figure should be correct, even if work from the nude is not intended, for otherwise it is extremely difficult to secure artistic and classic poses.

"A 'perfect' figure as shown by the Greek statues is so rare that we can almost declare it to be non-existent. Hundreds of years of tight lacing and high-heeled and poorly-fitted shoes have heightened the shoulders and curved the leg and spoiled the foot and ankle, as well as changed the lines of the torso, but occasionally there is to be found a figure that supplies some of the demands of the lover of classic art. To the beginner in photography the coloring of the face is always an attraction; but, alas! he is soon reminded that the rosy cheeks he has so much admired are noticed by the camera, and that unfortunately they darken rather than brighten the subject, and as red takes black he commences to realize the fact. The most successful work is done with a pale complexion, the whiter, the better; for a dark, sallow skin gives a muddy-looking picture without high lights, while a waxy, white complexion gives the marble-like effect so constantly sought and so seldom attained. A primary and vital point of portraiture in photography is that success lies in form and not in color, even with the use of the orthochromatic plate.

"Having secured a model as nearly as possible approximating his ideal, the artist naturally desires to make use of her as frequently as possible, and begins his experiments to secure a variety of poses and expressions. Differing costumes, varying accessories, and changes in the arrangement of the hair, are some of his opportunities. Some faces seem to have but one or two changes of expression. There is a most exasperating sameness; the face is always the same, be it costumed with shield and armor as Jeanne d'Arc, or dressed in gauzy white to represent 'A May Morning.' If the model have this annoying weakness, her sphere of usefulness to any one artist is most brief, for even if he himself does not

tire of her, his friends are sure to exclaim, 'Oh, that's the same model!' All his work of posing and draping goes for naught before such withering criticism, and he must fain secure some one 'new' who can ring many changes on her countenance.

"The ideal model must possess the qualities of an actress, for she must naturally be accustomed to assuming and retaining expressions and poses."

Mr. Berg concludes with a note on drapery for studies of feminine figures:—

"Of course, all artists know that evening and Greek gowns are manufactured out of the ever-useful cheese-cloth, which is lightly twisted and left twisted when not in use so as to produce the crêpy effect. The capabilities of cheese-cloth are never ending for draperies or curtains in background and foreground. It is serviceable, and

coming in so many beautiful colorings, is always grateful to the eye. But again, one is reminded of the limitation of color in photography."

We need say little more at the present writing, beyond entering a protest against the tendency to constantly emphasise the feminine in figure studies. Attractive as this phase of nature may be, it is not wise to confine our study to one half of the human race, and for the real artist in photography there is ample scope for individuality in figure studies of the sterner sex. It is true that men's unpicturesque costume stands in the way, but by the artist who is in earnest costumes can be provided for men, as well as for women; and if cheese-cloth is unavailable, much can be done with velvet, shawls, and half-a-dozen picturesque hats and caps.

Beauty Spots.

No. V.—Woody Warwickshire.

BY HAROLD BAKER.

FEW English counties offer to the photographer a greater wealth of material than Warwickshire; for not only is it rich in that quiet pastoral beauty so characteristic of the "Heart of England": watered everywhere by slow meandering streams, fringed with tall reeds and quaint old pollard willows, and bordered by lush meadows with mild-eyed cattle knee-deep in golden buttercup and silver ox-eye; but scattered over its face are grey old moated granges, half-timber farms, and lowly thatched

Permission to photograph within the castle courtyard is obtained at the estate office in the town, for the church a small fee is charged; Leicester's Hospital, by permission of the master. Hotels—Warwick Arms, Bowling Green and Woolpack. Warwick will be found a convenient centre for several other places of interest.

KENILWORTH has the grand ruins of its famous castle, and some good Norman work in the church. Hotels—King's Arms and Bowling Green.



TAMWORTH CHURCH.

By J. H. Pickard.

cottages; and in almost every village an old church affords fine subjects for the student of ancient architecture.

WARWICK, standing in the centre of the county, upon the Avon (one of the loveliest and most interesting rivers in the world), is a mine of good things, with its stately castle, fine church, unique Leicester's Hospital, and lovely views of the river.

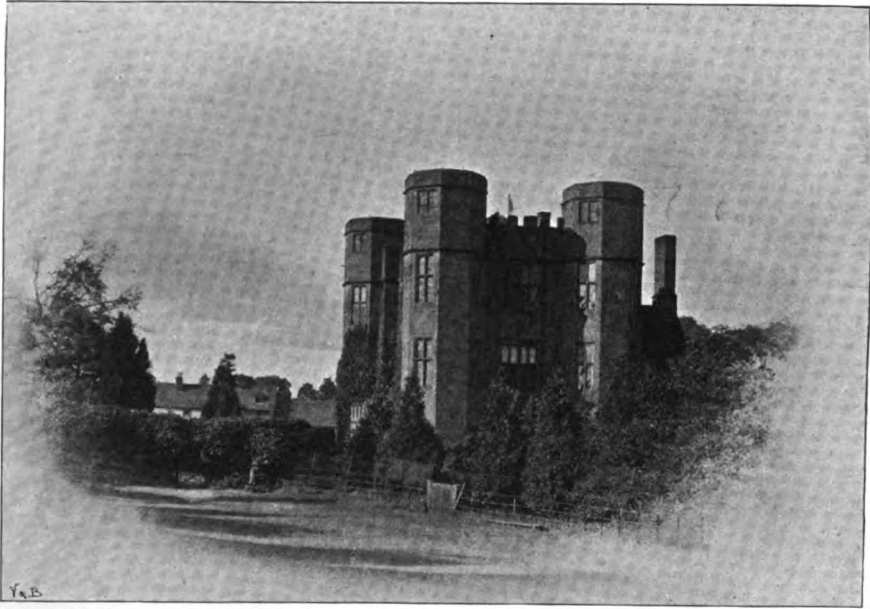


LEYCESTER'S HOSPITAL, WARWICK.

By Percy Alexander.

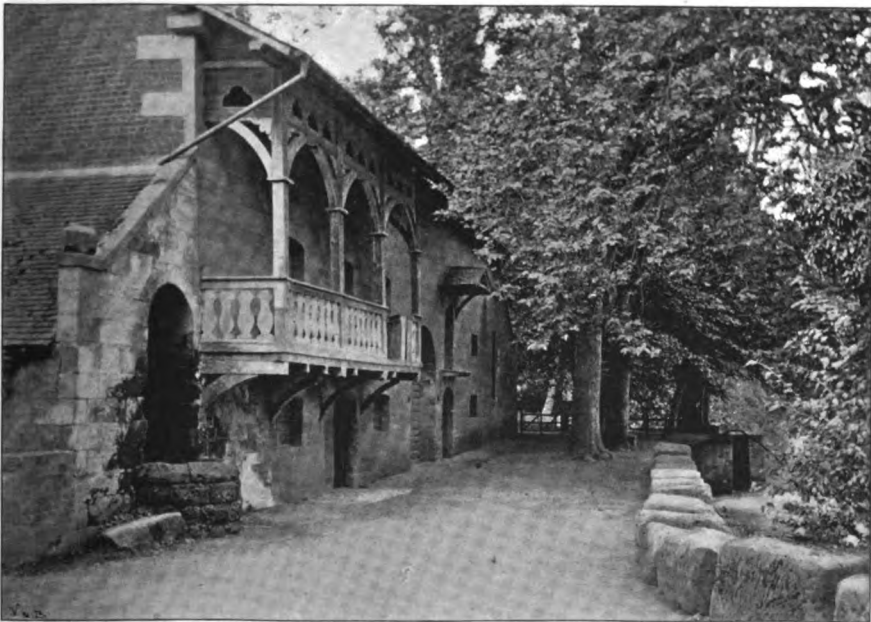
2nd Prize, Classified equal with W. W. Wright.

STONELEIGH PARK, close to Kenilworth, is full of good subjects on "Soft flowing Avon." Permission must be obtained from Lord Leigh. The village church contains some good Norman work, including a fine Norman font. There are several good villages between Warwick and Stratford, but the churches, unfortunately, have nearly all been restored or rebuilt.



THE KEEP, KENILWORTH CASTLE.

By W. W. Wright. 2nd Prize set, classed equal with Percy Alexander.



GUY'S MILL, WARWICK.

By Dr. John W. Ellis. 1st Prize set.

STRATFORD-ON-AVON, the Mecca of the English-speaking race, lies in a district full of fine subjects, in addition to the numerous views in the town, the Birthplace, the Church, the Guildhall, and many others too well known to need description, but a fee of £1 is. is charged for permission to photograph their interiors. *Hotels*—Red Horse, Shakespeare, Golden Lion, Falcon, Unicorn, Swan's Nest, etc.

ALCESTER, easily reached from Stratford, has some good streets of half-timber houses, and lies in a district full of beautiful subjects, for it has two extremely pretty streams, the Alne and the Arrow, flowing through it.

CHARLECOTE, also close to Stratford, has a fine park and noble hall with terraces leading down to the Avon. The park is well stocked with red

mansion in perfect preservation in a beautiful park, not open to the public, except by special permission.

MAXTOKE CASTLE is a good moated building, close to the picturesque town of Coleshill, which has a large church, containing, perhaps, the finest Norman font in England. An old pillory stands in the market place, and a good bridge crosses the Cole just outside the town. Maxtoke Priory is a picturesque ruin not far away.

PACKINGTON PARK has many grand old oaks, the remnant of the great Forest of Arden. Permission from the Earl of Aylesford.

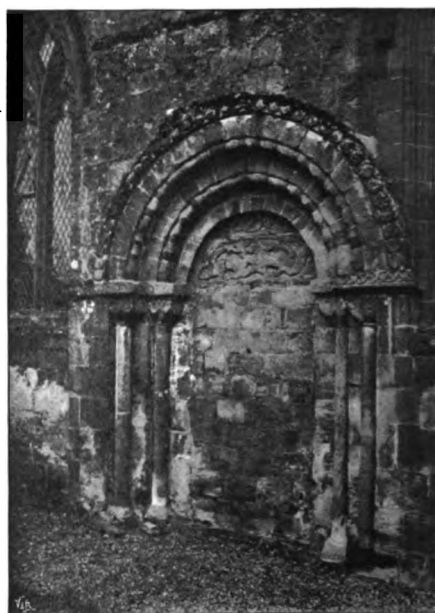
NUNEATON is the centre of the district made famous by the novels of George Elliot, "Scenes of Clerical Life," etc.

WOOTEN WAWEN has a most interesting



BEAUCHAMP CHAPEL, WARWICK.

By Dr. John W. Ellis. 1st Prize set.



STONELEIGH CHURCH.

By E. C. Middleton.

and fallow deer. Permission from Mrs. Fairfax-Lucy.

BIRMINGHAM, "the hardware village," although possessing few charms for the photographer is a convenient centre for many places of interest.

ASTON HALL, within a tram-ride of the centre of the city, is a fine Jacobean mansion, containing several good chimney-pieces and a beautiful long gallery and interesting entrance hall. Permission from Mr. Whitworth Wallis, Art Gallery, Birmingham.

At SUTTON COLDFIELD, about seven miles, there is a large park, with several pools giving good subjects of marshy foregrounds, while there are many oak coppices with rich undergrowth of fern, besides large stretches of common covered with heather and furze.

BADDESLEY CLINTON, about a mile and a half from Kingswood Station, G.W.R., is a fine moated

church, containing Saxon work and a desk with chained books.

COVENTRY, an ancient city well-known for its three exquisite spires, is full of interesting old buildings, the remains of monastic and corporate institutions, and rich in legendary lore and historic fact. Two of the ancient gates remain; Bablake Hospital is a good example of half-timber work; St. Mary's Hall is a fine building of early fifteenth century work containing some celebrated tapestry, commemorating the visit of Henry VI. in 1451. Ford's Hospital is a very fine example of half-timber work where a very wide-angle lens will be needed. Whitefriars, now used as a workhouse, contains some good fifteenth century work. *Hotels*—King's Head, Queen's, Craven Arms, etc.

COMPTON WINYATES, 14 miles from Banbury by road, one of the finest old houses in the

Midlands, dates from the reign of Henry VIII. It is a difficult place to get to, but well worth the journey. Permission from the Marquis of Northampton.

HENLEY-IN-ARDEN, accessible by rail from Birmingham, is a small picturesque town with an ancient cross in the principal street, and Beaudesert, half a mile away, has a very interesting Norman church.

BERKSWELL has a fine Norman church, with an ancient well close by, and the old stocks on the village green.

SOLIHULL, seven miles from Birmingham, possesses a fine church, and about a mile away is a beautiful moated half-timber house, Berry Hall.

In the southern part of the county, the shires—Warwick, Gloucester, Oxford, and Worcester—meet at the Fourshire Stone, close to Moreton-in-Marsh; the district in addition to natural beauty is full of interesting buildings. Close to Long

Compton, a very pretty village, are the King's Stone (illustrated in the March number of the *Photogram*), the Whispering Knights, and the Rollwright Stones, good examples of prehistoric monuments.

BRAILES has a remarkably fine church. BARTON-ON-THE-HEATH, WHICHFORD, LITTLE WOOLFORD and LITTLE COMPTON will all be found well worth exploring.

CASTLE BROMWICH, within a few miles of Birmingham by Midland Railway has a good Jacobean Hall, and close by at WATER ORTON are pretty lanes and a fine old bridge.

TAMWORTH, in the extreme north of the county, has an interesting castle, a fine old church, and some good views on the Tame.

At BURTON DASSETT, near Edge Hill, is an interesting Beacon Tower, and close to it a good windmill, while at Stockton there are two windmills close together at the top of the hill.

Architectural Notes for Photographers.

BY HAROLD BAKER.

Illustrated by OLIVER BAKER, R.E., A.R.C.A., etc.

Norman Doorways.

THE great thickness of the walls gave opportunities of which the builders were not slow to avail themselves, and deeply recessed doorways, with moulding after moulding elaborately carved, became a great feature of the later Norman style. The variety of enriched mouldings is almost endless, and it would be quite impossible to illustrate or even to describe them all.



FIG. 19.—IFFLEY, OXON.

Many of them were variations of one theme, the zigzag or "chevron," which became typical of the period.

Photographers sometimes deplore the scarcity of subjects, and sigh for fresh worlds to conquer; but if they would undertake to secure a series of negatives of the Norman doorways in their own districts they would find, not only plenty of work to do, but an absorbing and even exciting hobby.

The south door of Ifley Church, Oxon. (fig. 19) is carved on the outermost moulding with the signs of the Zodiac, enclosed in oval panels (this is usually called the "medallion" moulding), within are two rows of "beakhead" and "cable" mouldings combined, and the innermost "order"

consists of four rows of chevron, which is also carried round a circular window above the door. Another moulding is the billet, illustrated at fig. 20, from Eckington, Worcesters, an interesting example, as it is on a pointed arch, showing the gradual transition from Norman to Early-English, or thirteenth century work; and also because near it is seen part of the fifteenth century window which took its place.

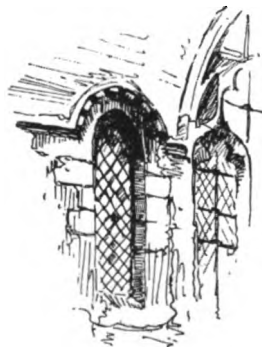


FIG. 20.—ECKINGTON.

The "double cone," chevron and billet will be found at Stoneleigh, Warwicks; the pellet and embattled at Bockleton, Herefords, and the chevron at Ludlow Castle. The west door of Tutbury Church, Derby, is a remarkably fine one, having seven different mouldings, the innermost being of alabaster. The shafts of the columns set in the recesses, at first quite plain, were, in later work, covered with enrichment in which figures were sometimes introduced. Snakes and dragons seemed to be favorite subjects, as they permitted the interlacing designs used largely in Saxon work to be combined with the growing taste for natural forms. At Shobdon Priory, Herefords,

built about 1140, are the remains of the most elaborate carvings of the Norman period known (fig. 23). The shafts are covered with ornament in which figures of men and birds are introduced, combined with elaborate conventional decoration; unfortunately the whole of the work is rapidly perishing from exposure.

Fonts.

Early fonts were very large, having been designed for immersion, the one (fig. 7, page 56) at Deerhurst, is a good example and



FIG. 21.—HADDON.

unusually rich for so early a period. At first the Norman font was a large plain bowl (like the example in the chapel at Haddon Hall, fig. 21) supported on a short stem; but in the South of



FIG. 22.—OXHILL.

England they are sometimes found shaped like a barrel without a stem, and covered with shallow decoration. During the latter part of the period, the sides were divided into panels often containing figures and sometimes foliage. But one of the finest fonts of Norman work is at Winchester Cathedral; it is made from a large square block of black stone hollowed out to form the bowl, supported on five columns. The sides of the block are covered with carvings of groups

of figures, on one side is a most interesting representation of a church and on another of a ship. It is a most valuable illustration to the student of architecture or of costume. At Halesowen Church, Worcestershire, there is another good example of a font on five columns, and an interesting instance of the "tub shaped" font is shown in fig. 22. from Oxhill, Warwickshire, but in this case it is not an early example, as the sides are covered with an "arcade" of interlacing arches, a form of decoration always indicative of late Norman work. One of the finest late Norman fonts in the Midlands is in Coleshill Church, Warwickshire. The font in Hereford Cathedral, and also that at Stoneleigh, Warwickshire, have twelve panels each containing the

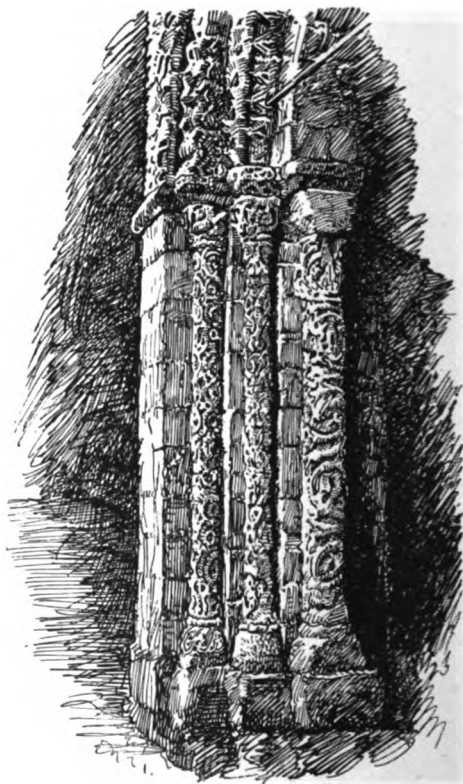


FIG. 23.—SHORDON.

figure of an Apostle, but unfortunately the figures at Hereford have been much defaced.

Norman fonts are so numerous and form such fine subjects for the photographer, that I have thought it desirable to illustrate them rather fully.

Many churches still retain their Norman west fronts, there is a good example at Bredon, Worcestershire, but the west window has been replaced by one of the fifteenth century. The door beneath has not been damaged, and is interesting because it is decorated with a variation of the double chevron peculiar to the district. On each side flat corner-buttresses are carried

above the roof, and have pyramidal terminations, which may be regarded as fore-runners of the beautiful pinnacles of the fourteenth and fifteenth centuries. These pinnacles were not merely ornamental, as their weight gave greater power to the buttresses to resist the outward thrust of the roof.

There is a fine pair of more elaborate Norman pinnacles at Bishop's Cleeve, Gloucestershire, and another at the church of the Hospital of St. Cross, near Winchester. But now that the magnificent pair at St. Albans have been destroyed the finest are on the west front at Tewkesbury Abbey Church (fig. 17, p. 164, wrongly titled), where there is a gigantic central arch, sixty feet high, now filled with tracery of the fifteenth century; on each side of the arch rises a turret, with a staircase within, and surmounted by elaborate pinnacles of most graceful design; the whole forming the finest Norman west front in existence.

Early Norman vaulting like that of Saxon times (see fig. 11, p. 57, Repton) had no diagonal projecting ribs, which were not introduced till later; a good example may be seen in the apsidal chapel in the south transept of Tewkesbury, and also in

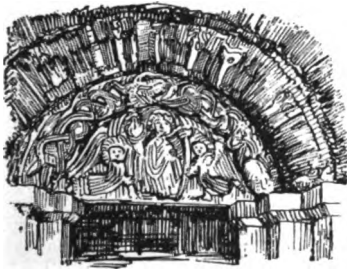


FIG. 24.—ST. KENELM'S, CLEINT.

the porch of the same church, which is very lofty and has a chamber over it sometimes called a "parvis"; such chambers are not uncommon, and were used sometimes as vestries and more often as the parish school. At Bredon there is a good example of a porch with diagonal projecting ribs in the vaulting, over it is a chamber now inaccessible, which was probably an "anchorhold" or dwelling place of an anchorite or hermit. The chancel of Beaudesert Church is another good example of early vaulting with diagonal ribs. The semi-circular space in the head of the doorway called the "tympanum" was often filled with a block of stone and carved, sometimes with conventional foliage, but oftener with figures illustrating some sacred subject or local legend. At St. Kenelm's Church, fig. 24, on the Cleint Hills the tympanum contains a rude representation of the Deity with the hand raised in the attitude of benediction, and an attendant angel on each side. At Shobdon, there is a somewhat similar figure with two angels on each side, and also at some old almshouses in the city of Hereford. At Ribbesford, Worcestershire (fig. 25), there is a curious piece of carving in which an archer is represented shooting with a bow and arrow.

There are good examples of Norman bridges in

various parts of the country, one of the finest crosses the Avon at Tewkesbury; it is not only an extremely picturesque object in itself, but derives additional interest from having been built in the reign of Richard I. by John, Earl of Cornwall, afterwards King, who gave the tolls of the market to provide a fund for its repair. It is, perhaps, more correct to say that this bridge belongs to the period of transition from Norman to the style of the thirteenth century. Until a few years ago Ludford Bridge, Ludlow, was one of the most beautiful old bridges in the country, but recently the parapet was rebuilt and the structure generally "renovated." The bridges of the Norman period usually have semi-circular arches with projecting ribs to give additional strength. Every bridge with round headed arches must not, however, be set down as Norman, because that form was used at nearly every subsequent period; there is a fine bridge over the Avon at Eckington, in which round-headed arches are used, but I do not think it can be earlier than the fifteenth century.

During the later development of the style a form of decoration for flat wall surfaces was introduced called "arcading"; it was generally



FIG. 25.—RIBBESFORD.

formed of slightly recessed arches, often intersecting, and so forming pointed arches, from which it has been suggested the pointed arch was derived; it is possible that such was the case, but it is hardly capable of proof. A good example is given from the ruins of Wenlock Abbey, Salop, other examples will be found at Norwich Cathedral, Bristol Cathedral, Croyland Abbey, and St. Augustines, Canterbury.

The details by which the work of the later Norman period is distinguished from the earlier, are the finely jointed masonry, the doorways and windows elaborately enriched with deeply cut carving, which was cut by the chisel instead of by the axe as in the earlier work, pillars which frequently have several small shafts attached, and the vaulting which now has ribs at the intersections of the groins. The gradual change or transition from the heavy massiveness of the Norman style to the grace and beauty of thirteenth century work is extremely interesting,

and may be traced in many buildings. The best authorities believe that the change had become complete in less than fifty years. At Hereford Cathedral, eastward of the reredos, is a most interesting example of change, for we find two columns supporting *pointed* arches with chevron enrichment, one pillar having a Norman capital and a thirteenth century base, while the other has a thirteenth century capital and a Norman base. The Temple Church, London, also affords a good illustration of the transition period. The chancel arch at Bredon is interesting, because while the arch is pointed, and the general

character is that of the thirteenth century, it is enriched with the zigzag or chevron ornament so common in the previous style. The west entrance to Ketton Church, Rutlandshire, is, perhaps, one of the finest examples, having a Norman door with nookshafts of decidedly thirteenth century character, while on each side of the door is a recessed arch acutely pointed, but having the chevron enrichment. But the choir of Canterbury Cathedral is generally admitted to be the finest example of the change. Nearly all the buildings of this transition period were erected during the reign of Henry II.

A New Light for Photographers.

By C. F. TOWNSEND, F.C.S.

FOUR hundred candle-power for 10 cubic feet of gas burnt per hour, costing one farthing! Noiseless, powerful yet soft, absolutely steady! What more can a photographer or anybody else desire in the way of gas lighting? My attention was called to the new lamp by a brilliant illumination appearing through the doorway of the workshop at King's College, where, like a good photographer, I was devoting my spare time to the mysteries of cabinet making. The light seemed too bright for incandescent gas light, and yet not cold and ghost-like enough for the electric arc; so my picture frames were neglected, and I proceeded to the engineering shops hence the light was coming. Here I saw a number of what appeared to be large incandescent gas mantles, mounted on cylindrical copper tubes screwed into the ordinary gas pendants. The brilliancy of the light, however, showed that something unusual was at work, for the large machine shop was as bright as day. In a few minutes I was introduced to M. Caton, the inventor, who was superintending the experimental installation. With the greatest courtesy and much enthusiasm, M. Caton explained the principles on which his invention, "*La Lampe Caton*," was based, and invited me to call on him in Leadenhall-street, where I had an opportunity of going into the question more thoroughly.

Before describing the new lamp further, a few words about the principle on which the incandescent gas light works, will make the account of the light more intelligible. A Bunsen or other similar burner, in which a mixture of air and gas is burnt, is non-luminous. To produce luminosity it is necessary to have solid particles of some kind in the flame. A candle is luminous, because one zone of the flame contains solid particles of carbon, which are raised to a white or yellow incandescence by the intense heat. The hotter the flame, the greater will be the quantity of light given off by the incandescent body. In the ordinary incandescent burner, the mantle, composed of a fine network of infusible substances similar to lime, takes the place of the carbon particles of the ordinary candle or luminous gas flame. The actual flame that plays on the mantle is non-luminous, the light being emitted by the incandescent material in the mantle. Now, if, instead of allowing the gas to burn with a mixture

of the air it can drag in through the air-holes in the burner, and the air surrounding the flame, sufficient air is forced into the flame to burn the whole of the gas without calling on the outside air to supply any, the intense local heat of the blowpipe flame is obtained. That is the principle of M. Caton's lamp: the mantle is kept at an intense heat by a blowpipe flame.

The secret of success in the new burner is that the gas and air are mixed perfectly before reaching the flame, and, consequently the combustion is perfect. Another most important point is that the gas and air travel at the same rate, so that there is no noise or flickering.

This desirable end is attained by causing the air and gas to pass through a spiral tube or series of tubes, whence they issue thoroughly mixed. It is essential to success that the tubes should be cut to a particular pitch or angle, which the inventor has determined. To a lanternist this mixture of gas and air before reaching the burner will seem dangerous in case of lighting back, but the mixing tubes are safeguarded by wire gauze. Even without this the inventor declares that the quantity of air and gas actually mixed at one time is too small to cause an explosion. In cases where the burner has been damaged accidentally, a slight puff has followed and the gas has been blown out; nothing more.

The air necessary for combustion is supplied by a small injector, worked by water-pressure. For a large installation a metal one would be required, but where only a few lamps were used a glass one, such as is commonly used in chemical laboratories, would be sufficient. The cost of the metal injector would be £1 perhaps, and that of the glass one, a few shillings. To this must be added the cost of a few feet of iron or composition piping as the case may be—a comparatively small item. The cost of the water power required is insignificant. For five 400-candle lamps, eight gallons of water per hour at the ordinary high pressure of town services would be ample. Water is charged by meter at 6d. per 1000 gallons, so that the water for a light of 2000 candles would only cost 1d. for 24 hours.

The temperature of the flame is 1800° Centigrade (3270°F), so that no chimney can be used with the lamp. Paradoxical as it may appear,



PAINTERS' STUDIES FOR PHOTOGRAPHERS.—III.

*Arranged by Mr. Mason and Mr. Pocock, at the
Birkbeck School of Art.*

the heat produced is *less* than that given off by burning the same quantity of gas in any other way. Although the local heat is intense, the total quantity given out is comparatively small because so much of the energy of the flame is converted into light. M. Caton wishes it to be clearly understood that he only claims the lamp, and is willing to use any mantle on the market. Purchasers, therefore, need have no fear of infringing existing patents. The price of the lamps has not been fixed at present, but it will probably not exceed 2s., to which must be added the cost of the mantle. Lamps of all sizes are made, to give light from 25 to 400 candles; the small lamps

having the same efficiency as the large ones.

What struck me as the great advantage of the lamp from a photographic point of view was its remarkable diffusiveness. There were no heavy shadows anywhere. Even right under the lamp no appreciable shadow of the pipe could be seen. The light seemed to proceed from the lamp horizontally, to be diffused softly and evenly by the walls. The inventor took me behind a heavy piece of machinery, where with almost any other lamp would have been deep shadow, and it was like being in diffused daylight. Reading was perfectly easy, and colors could be distinguished quite as well as in daylight.

Printing on Drawing and Etching Papers.

BY E. SANGER SHEPHERD.

THE artistic photographer often finds himself greatly handicapped by the small control he has over his pictures, arising from the monotony of texture in commercial printing papers.

Now a large number of papers having a wide range of texture suitable for photographic use can be obtained from the artist's colorman, and I propose to describe a simple method of preparation which will be found to give very fine results with the minimum of trouble.

I will first mention some of the papers I have found most useful for small work. My favorite is "Allongs." This is a paper not unlike Whatman *not*, but with a finer and more even grain; having but little sizing it is rather liable to tear when wet, but in sizes up to 10 x 8 there will be little difficulty from this cause. Whatman *not* and *rough* are well-known and always reliable, the *rough* is a splendid paper for large work. Wrigley's imperial amber antique *rough* surface boards are also suitable for large work, and are very cheap. A very artistic paper for either portrait or landscape work will be found in the Dutch hand-made "Van Gelder;" several textures are supplied both in white and amber small quantities may be obtained from the London agents, Messrs. Grosvenor, Chater & Co., Cannon-street, E.C. Lastly, for fine work, I can strongly recommend the Japanese proof papers and vellum. Of the latter there are two kinds, plain and water-proof, the plain is the kind most suitable for our purpose.

Having selected our paper, let us turn to the operations; these may be divided into salting, sensitising, printing, toning, fixing and washing.

To prepare the salting solution, dissolve half an ounce of gum sandrac in ten ounces of alcohol. In a separate vessel dissolve quarter of an ounce of calcium chloride in one ounce of water, add to the gum solution, and shake well. Some of the gum may be thrown down, but this will not matter. Allow time to settle and then filter.

Small sheets may be immersed in this bath for two minutes, but when only a few sheets of large size are required, the following plan will be found to give equally good or better results, with far less waste of the solution.

Obtain from a rubber shop a spray apparatus, as shown in fig. 1, with ball and tube. The openings in the glass tubes (a, b) should be small

so as to ensure a fine spray, test the apparatus with water first to get the adjustment right, insert the tube (a) in the salting solution, pin the paper on a drawing-board, and go over the surface with the spray, working in straight line from right to left, and crossing these at right angles, so as to ensure the paper being evenly coated. When quite dry, the sheets, if cockled, should be pressed flat with a warm iron; in this state the paper will keep indefinitely.

To prepare the sensitising solution, dissolve one ounce of nitrate of silver in eight ounces of dis-

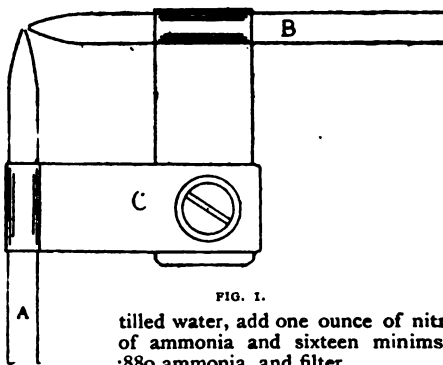


FIG. 1.

tilled water, add one ounce of nitrate of ammonia and sixteen minims of .880 ammonia, and filter.

Small sheets may be floated on the bath for two minutes. For large sheets use a spray, but a separate nozzle must be kept for use with this solution only, and the metal part should be of silver, or heavily silver-plated.

The paper should not be bone dry before sensitising; it is best to lay it in a damp place an hour or so before, or it may not take the solution evenly. If sensitised over-night, and pinned up in a warm room, it will be quite dry and ready for use by the morning.

Printing should be carried deeper than the finished print is required, as some strength is lost in fixing. If the prints, owing to flat, thin negatives, lack vigor, add five grains of potassium bichromate to the salting solution, this will slow the printing, increase contrast, and ensure pure whites.

To make the toning bath dissolve fifteen grains of chloride of gold in one ounce of water,

neutralised with a pinch of chalk. Dissolve two drams of acetate of soda in thirty ounces of water, add the gold solution, and filter. This solution may be used after twelve hours, but it improves with keeping.

The free silver should be washed out of the prints before toning. For red tones simple fixing will give pleasing results. A slight toning will give rich browns and sepia, whilst if carried to the bluish-purple stage, the same bath will give good blacks; the prints when dry are considerably more blue in tone than when wet, so that the toning should be stopped at a warmer stage than the finished pictures are desired. Fix in a fresh ten per cent. solution of hyposulphite of soda.

Platinum toning will be found to work well with these papers. To prepare the bath dissolve fifteen grain of perchloride of platinum in two ounces of water, dissolve six grains of hyposulphite of soda in ten ounces of water, add ten minims of hydrochloric acid (pure) and two drams of the platinum solution; to secure good results with this bath, take care that all the free silver is washed from the prints before commencing to tone.

The sensitised paper will keep for a week or two if put under pressure in a deep printing frame between pads of blotting paper which have been steeped in a saturated solution of carbonate of soda and thoroughly dried.

Telescopic Photography for Amateurs.

By JOHN MILLS, F.R.A.S.

It is possible by extremely simple appliances to do good work in celestial photography, even to photograph the sun and so make a valuable and continuous sun-spot record.

This work, however, demands careful manipulation, and especially is this the case when a telescope is employed without an arrangement for keeping the image always in the same part of the field of view. The earth, owing to its rotation on its axis, causes an exposure of but short duration to impart a trailing effect which renders the picture absolutely worthless, and it is, therefore, necessary to ascertain by trial the time of exposure which may be given without detracting from the value of the results obtained.

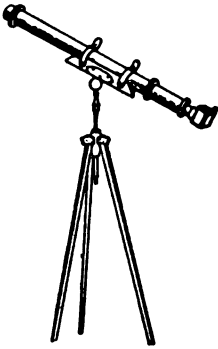


FIG. 1.

The aim of this brief sketch is to indicate to such readers of *The Photogram* as desire to extend their practical knowledge of photography to extra-terrestrial objects, how they may begin the new departure by the aid of apparatus which is cheaply obtainable, or may be constructed at a small outlay and the exercise of a little mechanical ingenuity. The accompanying figures represent the appliances actually employed by the writer some years ago in a series of experiments conducted with the view of ascertaining the simplest means of photographing celestial objects. The telescope (fig. 1) is a home-made instrument, the tubes and cells for the lenses being formed by rolling brown paper smeared with thin glue on to

wooden rollers of transverse sectional area corresponding with the lenses employed. These tubes, made for carrying rolled papers safely through the post may be obtained from any good stationery

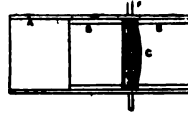


FIG. 2.

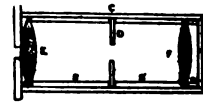


FIG. 3.

warehouse. They can be easily cut with a fret-saw; or equally well, though not so easily, with a pocket-knife. The lenses—which may be purchased for about four or five shillings—constitute the only item of expense worth mentioning. In this instrument the object-glass is of two inches aperture, and the eye-piece, Huyghenian or

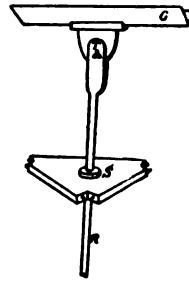


FIG. 4.

negative, and of that simple form known as the astronomical telescope. Fig. 2 shows a method of fixing the object glass (C) in the tube (A) by means of cardboard rings (BB). Fig. 3 represents the compound eye-piece formed of a one-inch focal length lens (E) and a three-inch focal length lens (F), fixed by cardboard rings (BB and R) at the mean distance of two inches apart, the focus of

NOTE.—The set of lenses for telescope described here may be bought from Sharland and Co., 8 Thavies Inn, Holborn, for 4s. 6d., and lest readers may fear that a cardboard tube telescope is useless, I may point out that such glasses are very extensively used in educational work, and are sold at very reasonable prices by George Philip and Son, Fleet-street; Chapman and Hall, Ltd., Covent Garden, and probably by many other educational supply houses.

the eye-piece being about the diaphragm (D). It is of sufficient space-penetrating power to show Jupiter's moons, Saturn's rings, the phases of Venus, resolve double stars, and greatly augment the number of stars seen by the naked eye in clusters such as the Pleiades, while the detail on the moon's surface—hill and dale, mountain and chasm, light and shade—are brought out with gratifying clearness.

The length of the main tube will depend upon, and should be rather less than, the focal length of the object-glass employed. If this element is

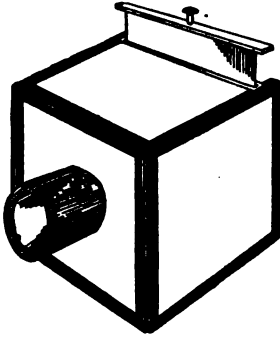


FIG. 5.

unknown, the amateur may readily determine it for himself by holding it up to the light in front of a sheet of cardboard till a window or other object forms a clearly defined image thereon. The distance of the lens from this extemporised screen is the focal length of the object-glass. The two-inch lenses supplied by Sharland may be of different focal lengths, for example, 40" and 27", the latter being preferable because the shorter length tends to greater stability when the telescope is mounted on a tripod stand. The focus is roughly adjusted by an adapter (D), fig. 4, which slides in the main tube, and the eye-piece is movable for finer adjustments in the tube (A) firmly fixed by the diaphragm (B) and flange (C). This adapter, or drawing tube, should be about 10" long, so as to admit of focussing objects at varying distances.

Any form of telescope, however, which comes to hand will answer the purpose equally well, and the tripod stand of an ordinary camera may be readily adapted to support the instrument; which must be so arranged as to admit of motion in two directions—up and down and to and fro, or, as the astronomers would say, in *altitude* and *azimuth*. Fig. 5 indicates the way in which an auxiliary piece may be constructed for use with the ordinary tripod. The shoulder (S) admits of rotation of the vertical rod (R) in azimuth, and the thumb-screw (T) is capable of retaining the V-shape groove (G) at any angle, so that the telescope supported in the groove may thus sweep the heavens in altitude.

All that is requisite in the way of a camera may be constructed out of a cigar-box, the joints being bound round with thin leather, as indicated in fig. 6 to render the chamber light-tight. The little cubical box (about $3\frac{1}{2}$ " face) thus formed may be attached to the eye-end of the telescope by means of an adapter in the form of a tube made

of brown paper and of a diameter suited to the telescope in conjunction with which it is intended to be used. The dark slide, of course, is of the ordinary kind, in miniature, and the plates may be obtained by slicing up quarter-plates into two or four pieces.

From what has been already said, it will be seen that when a telescope is used for photographic purposes, the sensitive plate replaces the eye and receives the image of the distant object. Further, there are two methods of taking pictures of celestial objects. (1) The object-glass of the

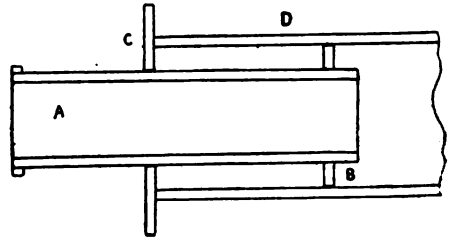


FIG. 6.

telescope may be used alone for forming images, that is to say, the principal focus of the instrument where the picture is smallest and most sharply defined, and (2) the eye-piece may be employed as a secondary magnifier in conjunction with the object-glass. In this case, however, the image, though large, is not so satisfactory, and it is, therefore, better to enlarge in the usual way from the negative obtained by the object-glass alone.

It is important in attempting the photography of celestial objects with a telescope to bear in mind that the lenses of ordinary instruments are not corrected for the actinic rays, and consequently the images received in the glass screen when in focus will not correspond with the focus of the chemically active rays. The amount of adjustment for this source of error can only be found by trial, and the initial efforts of any beginner in celestial photography will probably be attended with disappointment arising mainly from this non-coincidence of the two kinds of light rays named.

The sun's light is so intense when focussed that it is very difficult to avoid over-exposure. We must, therefore, reduce the light by the use of cardboard diaphragms placed over the object-glass, the aperture being thus reduced to about half an inch. An ordinary felt hat may be used for exposure in lieu of a cap. Better than this is a simple flap of cardboard, covered inside with black velvet, which may be hinged to the end of the telescope, and, if desired, supplied with a spring of elastic to ensure its quick closing. The length of exposure in the case of the sun must be as brief as the operator can possibly make it. In this way the time of exposure may be controlled so as to render the problem of photographing the sun eminently practicable. It may still happen, however, that instead of a negative image a positive one is obtained. It is best to attempt

the moon when about four or five days old, because then the rugged outline between light and shade, and the shadows in the craters are such distinct features. Several photographs may be taken on one plate by tilting the instrument slightly in the interval between successive exposures. In the case of the moon it will be necessary to give an exposure of about five seconds, sometimes less, but generally more. A few preliminary shots, however, will do more than a multitude of words in paving the course of the amateur in this branch of photography. I need hardly say that very rapid plates should be avoided, and medium or slow plates used.

Many years ago De la Rue and Rutherford,

the pioneers of celestial photography, produced exquisite photographs of the moon. They first obtained a small picture about one and a half inches in diameter, and afterwards enlarged it to—in some cases—about three feet. In our modest instrument, the negative will be little more than quarter of an inch in diameter.

At the present time what is known as the sun-spot minimum is not far off, and the spots are not so plentiful as they were a year ago. Nevertheless, there are nearly always some of these interesting objects visible on the sun's disc, and those who care to do so may fix them on the sensitive plate.

The Autocrat of the Work-room.—Printing from Bad Negatives.

Few photographers are so blessed as to be never called upon to produce decent prints from wretched negatives, and at some period of our career we have, most of us, had to consider the best means of doing this without unnecessary expenditure of time and material.

Unfortunately, there are many degrees of negatives that must be classed as bad: some only just a shade removed from good, and some not a shade removed from execrable.

Among the former we may class otherwise good negatives having the detail in the shadows of hardly sufficient density to prevent "clogging," in other words the detail, in the course of printing, becomes lost in a mass of heavy shadow.

There are various simple means by which this trouble may be overcome, one of the simplest being the use of Prussian blue on the back of the negative. The color (preferably a moist water color) is mixed thickly, the best plan being to moisten the tip of a finger and rub it on the color until a sufficient quantity adheres, and then apply to the glass side of the negative by repeatedly dabbing it with the colored finger tip until the clearest parts of the negative are decidedly blue in color. The color will, at first, be inclined to dry in ridges and unevenly, but this can be overcome by occasionally breathing on the work while dabbing it. Should the edges of the color spread beyond the required limits, it is best to soften the edges and remove the surplus color by breathing on the edges and lightly dabbing with a clean finger. After trying a print, if the effect is found suitable, the work can be fastened by covering the whole of the glass side with a coat of thin negative varnish, or a crystal varnish made of Canada balsam and turpentine, or gum dammar and benzole.

Another plan for preparing this class of negative for printing, is to cover the glass side with matt varnish and, when dry, work upon it with a paper stump and finely powdered graphite; the extreme high lights may then be freed from the dull effect of the matt varnish by painting over them with a camel-hair pencil charged with a thin mixture of Canada balsam and turpentine.

In order to print from negatives that are so

extremely dense from over development as to be practically useless, it is best to first reduce them by immersion (after fixing, and while still wet) in a ferricyanide reducer, until the over density is removed. The proportions of ferricyanide to hypo is not of great moment so long as one remembers that *the amount of ferricyanide governs the speed of reduction*. A useful bath can be made by adding to each ounce of hypo solution (1 to 4) about three grains of potassium ferricyanide—commonly known as red prussiate of potash. When the negative is sufficiently reduced it must be well washed, and will then probably print without further trouble.

Cracked negatives are rather troublesome; unless proper precautions are taken they are likely to leave an ugly white line along the course of the break. If the film is not broken, the negative should be cemented (glass side, of course) to another plate of glass, by means of Canada balsam, to prevent breakage; if the back is then covered with tissue paper, and the printing frame containing it be placed in a box about 18 in. deep and just large enough to contain it, prints may be secured without a sign of the fracture. A far better plan, however, is to place the negative (previously cemented to sound glass) in a weak bath of hydrofluoric acid and water, about twenty drops to the pint, until the edges of the film begin to rill; the plate should next be transferred to clean water and worked loose by gentle manipulation with the fingers until it floats free from the glass, when it may be at once floated on to a new plate and placed to dry. Unless one has had some experience with this acid I should recommend the use of Cresco-Fylma in preference.

By these methods of transference the film is inclined to become enlarged; if this is undesirable the films may be again reduced to their normal condition by a few minutes' immersion in a bath of equal parts of methylated spirits and water, with about two drops per ounce of glycerine in addition.

Thin negatives should, of course, be intensified according to one or other of the many formulæ so frequently published, but the variety of "bad" negatives is so numerous that it is difficult to give ample directions for their treatment, without

having to deal with particular cases. There are many negatives that, while not being extremely bad, are too bad to give good prints by all processes; a knowledge of the requirements of such negatives often renders it possible to procure really good prints without resorting to intensification or reduction.

Without attempting to go fully into the matter, a few hints will probably prove of assistance in adapting a printing process to a negative.

For instance: how can we produce the best prints from a dense negative full of contrast and brilliancy? This class of negative is hardly suitable for most of the gelatino-chloride printing-out papers, as they are liable to yield chalky results, too harsh to be pleasant. The cold bath platinotype process will usually give a good print, if printing is carried far enough and development carefully effected; the bromide process will give excellent results if a full exposure at short range be given, followed by a diluted developer; the carbon process also will yield first-class results if the paper is specially sensitised on a very weak sensitising bath, and the exposure proportionately prolonged; gelatino-chloride P.O.P. may be used, but the best results will be gained by partial printing and subsequent development with weak solutions.

Thin negatives can be made to give good prints by adopting bromide paper, covering the negative with tissue paper, and giving a not too short exposure at a considerable distance from the lantern. If carbon paper be used it must be sensitised on a very strong bath, and an extremely short exposure given. Gelatino-chloride P.O.P. can be used either by printing out or by adopting partial exposure and finishing by strong well-restrained development.

But by far the best thing I have yet tried for printing from "ghosts," is the "Rembrandt" collodio-chloride paper, which is especially prepared for the purpose; prints may be made in the ordinary way without the slightest difficulty. Yet the results are so extremely good as to beat anything else for this particular style of bad negative.

As to illumination, whether natural or artificial, there is one good rule that may be generally applied: for strong negatives use a strong light, for weak negatives use a weak light.

The Autocrat.

Thought Photography.

A FEW months ago the announcement recently made to the Société de Médecine by Dr. Baraduc would have been laughed to scorn. But Röntgen has taught the sceptic to be cautious, so we read with interest what the French doctor is able to tell us, and patiently wait until he can tell us more. Dr. Baraduc is an electropathist—a curer by means of animal magnetism—and for this alone his communication would have been ridiculed a few years ago. He tells us that the magnetism or "vital fluid" which passes through him, and with which he affects his patients, is a very real force, and one which can be demonstrated by purely scientific tests. When he is in good magnetic condition, if he places two magnetometers on the table and holds a hand toward each of them, both will be deflected. The right hand attracts one needle over a space of some fifteen degrees, the left repels to the extent of five degrees. Dr. Baraduc postulates two fluids, or forces, one entering the body and called aspir, the other leaving and called expir. The difference of ten degrees between the current entering and leaving is supposed to represent force accumulating in the body, and therefore available for curative or other purposes.

If dry plates (in darkness) be used instead of magnetometers, the one opposite the right hand will be found, on development, to shew cloudy masses; while the left hand causes dots like a shower of rain-drops. Dr. Baraduc has many times repeated his experiments, as have some of his friends, and though they do not always get results (especially when the attention is distracted), they have obtained the results above described in over three hundred cases.

Carrying the matter a step further, the doctor finds that by firmly concentrating the mind on a definite object, so as to distinctly visualise a picture thereof, the image may be impressed upon a dry plate. He has found it necessary to concentrate his thought for periods varying from ten minutes to two hours; and the difficulty (for, most folks an impossibility) of clearly visualising a thought, and of concentrating the mind thereon for any length of time, forms the great drawback to the process.

This is very much the same sort of thing as was announced in *The Amateur Photographer* by W. Ingles Rogers, and quoted, with illustrations, in our own issue of January last. The feature of the impression of the plates by emanations from the hands is different, and on this point we know of a curious bit of confirmatory evidence. One of our best-known photographers has days when he cannot handle a plate without fogging it in lines proceeding from where his fingers touch it, an effect which is *not* due to heat, since at other times he can handle the plates as long as he likes without trouble. If we remember rightly, there was some similar series of experiences recorded by W. Brooks, of Reigate, in a paper read before one of the London photographic societies some eight years ago.

• • •

The Next Exhibition of the Society of Lady Artists is to be held in January, 1897, at the Suffolk-street Galleries, and is to include a section devoted to photography; particulars may be obtained from Miss F. E. Partridge, 9 Nottingham-place, London, W.

Current Topics

The Leeds Camera Club has designed a gorgeous certificate, which should tend to greatly increase the interest of its members in its competitions.

The Sunbeam Postal Photographic Club has a few vacancies. J. T. Pattison, of Fawley Lodge, South Woodford, is the secretary, and will be pleased to send particulars to any photographers wishing to join.

The Photographic Society of Japan has decided to build permanent premises of its own, and has obtained a design from Mr. Isawa, one of its members. After the annual meeting a lecture on "Radiography" was given by Prof. K. Yamakawa, Ph.D.

Theatrical Portraiture.—The idea embodied in the article by George Gillingwater in our issue of October, 1895, that foot-lights should be provided for lighting in the photographing of "made up" actors and actresses, has been put into practice by one professional firm. Such a foot-light arrangement is to be found in the newly-opened studio of Speaight & Co., in Regent street.

Many of our readers have expressed ex-



BYLAND ABBEY. BY GEORGE HEPWORTH.

1st Prize, Beauty Spot No. 9 Competition. Classified equal with J. D. Hastings.

The Grimsby Society sets special subjects each month for its members to illustrate. The series for the present summer includes pleasure, street scenes, rural life, curiosity, architecture, and shipping.

Elementary Lectures on "Photography" are being given to the Hackney Photographic Society, during the summer. Such a practical means of educating the younger members should attract many.

The Medal of the Society of Arts has been given to W. J. Dibdin, F.G.S., for a Paper on "Standards of Light"; to A. A. Campbell Swinton for a Paper on "Röntgen's Photography of the Invisible"; and to Gleeson White for his Paper on "The Poster and its artistic possibilities"; while the special thanks of the Council are given to Captain W. de W. Abney for his Paper on "Orthochromatic Photography."

treme interest in Professor Packer's article in our last issue. Some have cast doubt upon his conclusions, but since the repetition of his experiments is so exceedingly simple, it seems unnecessary to argue about the matter, and better to experiment upon it. The very cheap telescope described in Mr. Mill's article in the current number will enable anyone to settle the question for himself.

Metric System.—The movement in favor of introducing a metric system of weights and measures into the United Kingdom, will be supported by none more heartily than by photographers, whose difficulties between the avoirdupois weight by which chemicals are sold, and the apothecaries weight by which their formulæ are made up, are very numerous. It would also help towards the uniformity of photographic experience if the United States would make the same move,

for the difference between the English pint of 20 ozs. and the American pint of 16 ozs. very often leads to error.

We regret to record the death of Alexander Johnston, Wick, who died after an illness of some month's duration. Mr. Johnston from a boy evinced great interest in art studies, and devoted his attention specially to photography. He first set up as a photographer at Willowbank, where he soon became known as an expert photographer. Some years ago he was joined in partnership by his brother, who is now also a photographer of great eminence. Mr. Johnston has been a frequent contributor to photographic journals, and his loss will be felt by a great many friends. The funeral took place at the New Cemetery, Wick, and was attended by a large number of townspeople.

Employment Seekers should beware of some of the people who are advertising for pupils on lines similar to those which announce "a respectable living easily and honestly earned by people of both sexes without hindrance to present occupation." One or two concerns of this kind are offering to teach retouching and photographic finishing for fifteen or twenty guineas. They guarantee proficiency and also employment. Our advice has been asked in some of these cases, and in those where we have made personal enquiries we are in a position to say, decidedly, don't. The teachers are in no position to guarantee employment, even if they could ensure proficiency, and their circumstances are such that it would be useless for the disappointed student to take legal proceedings for recovery of the money.

The Photographic Exhibition at Camp Hill Gallery, Glasgow, is one which may well be imitated by other local authorities. It is distinctly educational in its aims, very thoroughly represents the history and the present position of photography, including its most important scientific and commercial applications, and is open free to the public, in a charming little Art Gallery consisting of a series of comparatively small rooms. The introduction to the catalogue gives a good deal of interesting information for those who may visit the exhibition, and some notes are given to many of the pictures that have scientific interest.

Forthcoming Exhibitions.—We would remind our readers that our Competition No 11, the last of "Beauty Spots" series, closes on July 30th. The competition is for views in London (within seven miles of G.P.O.).

SOCIETIES' PRIZES.

Society.	Points.
Liverpool Amateur Photographic Association... 4 (Won by Dr. John W. Ellis.)	
Edinburgh Photographic Society... 3½ (Won by Miss Christian H. Curle and C. P. Cameron.)	
Croydon Microscopical and Natural History (Photographic Section) ... 2 (Won by Harry D. Gower.)	
Société D'Etudes Photographiques ... 2 (Won by A. Villain.)	
Northern Counties Photographic Association ... 2 (Won by J. D. Hastings.)	
Leeds Camera Club ... ½ (Won by Morris May.)	

The Institute of Photographic Artists is curious in that it seems to be in the hands of men

unknown to photographers. The president, vice-president, provisional council, and directors are:—Luwee Harris, F.I.A.S.; E. C. Toller, F.I.S.E.; Henry Snowball, F.I.S.E.; and H. H. Robinson, F.S.I. There is also an organising secretary, and a secretary. The offices are 61 and 62 Chancery Lane, W.C., and the membership is confined to professionals. The Institute's objects are good, and may be practically summed up in the words of the prospectus:—"To provide an organization for photographic artists, with the view of promoting the interests of the profession, and to do all such things as from time to time may be thought



ILKLEY, YORKS BY J. D. HASTINGS.
1st Prize, Beauty Spot No. 9 Competition. Classified equal with Geo. Hepworth.

necessary or advisable to elevate the status, and further the advancement thereof." As a first step, they might get a few representative photographers on the council.

Competition No. 10.—Views in Warwickshire. This Competition was a very gratifying success, and we had a larger number of prints than in any former Competition of this series. The first prize was awarded to Dr. John W. Ellis, 18 Rodney Street, Liverpool, and as his marks are credited to the Liverpool Amateur Photographic Association, this Society is in front of the Edinburgh one by half a mark. The next set was difficult to choose, two of the competitors being equal. It was, therefore, decided to divide the prize. The winners are Percy Alexander, 6 St. Michael's-square, Leeds, and W. H. Wright, Moor Head, Sheffield. Certificates of Honorable Mention have been sent to R. M. Readdie, 137 Morrison-street, Edinburgh, and to J. L. Butterworth, 73 Prince's-road, Edgbaston, Birmingham. We use some of the winning prints in our "Beauty Spot" article.

The Convention is extensively treated by all our contemporaries, so we content ourselves with the reproduction of one or two typical views in the beautiful district that was visited. When we go to press the Convention will not have commenced, and when we reach our readers it will be almost ancient history. The Council is almost entirely composed of the same gentlemen whose portraits we gave as a supplement to our issue of July last year. The present year's Convention had a number of somewhat special features, amongst them being a thorough demonstration of radiography up-to-date by F. W. Branson (of Reynolds and Branson). Watkinson & Co., the extensive camera makers, took rather a new departure by building a special travelling dark-room, and granting the use of it, with the services of a competent assistant who followed each day's excursions. There can be little doubt that this will be a feature of all future Conventions, as it is an improvement even upon the excellent arrangements made last year, when a photographer's travelling caravan was hired by the local committee, and taken from place to place. The union of the National Association of Professional Photographers with the Convention is a matter on which both bodies are to be congratulated, and we trust that it marks the beginning of a better and more successful time for the N.A.P.P. The constancy and devotion of the leaders of that body, and their very great sacrifice of time and money has deserved a much better recognition than it has yet met with at the hands of photographers. Curiously enough, Leeds was the scene of the meeting at which the N.A.P.P. was founded six years ago, so that it will be perfectly appropriate for its revival to commence at a Leeds meeting.

Photography and Advertisement.—Few advertisers have made more use of photography than the well-known Mellins' Food, the objects of whose proprietors are undoubtedly achieved by their photographs of chubby babies. For some reason, which is not yet quite apparent, this firm has decided to hold an enormous Art Competition and Exhibition, in Queen's Hall, Langham-place, in January next. Prizes to the value of £1,000 are offered, and are divided between painters and photographers. The photographic subjects are divided into five classes. Prizes in money and goods to the value of £56 16s. are offered, in addition to four gold, four silver, and 100 bronze medals. There are also gold, silver, and bronze medals offered for lantern slides. The conditions seem to promise that the competition will be very well conducted, and the judges are H. P. Robinson, Rev. F. C. Lambert, and Bernard Alfieri. We are somewhat surprised that no class for photographs suitable for advertising purposes is included in the competition, and would suggest that, if it is not too late, such a class should be arranged. Although the attempt in this direction made some time ago by Faulkner & Co., was not so successful as might have been wished, the use of photography in advertisement is very rapidly increasing, and we think that the competition on these lines, arranged now, would produce very much interesting work.

"The Process Photogram" is being increasingly taken up by readers of *The Photogram*. It contains the matter of both issues, and the photo-mechanical part is in some respects far more interesting and valuable than the photographic part.

Exhibitions and Competitions.

These particulars are given when the Exhibition is first announced, and again when it is time for entries to close. The Secretaries' names are only given when the Exhibitions are open to receive work.

Name of Exhibition.	DATES.			Prizes.	Open Classes.	Special Notes.
	Entries.	Pictures.	Exhibition.			
1. Bournemouth Photographic Society	July 31. Nov. 30.	July 31. Nov. 30.		£1 1s., 10s. 6d. and 5s.		Open to Members of the Bournemouth Photographic Society only.
2. Hearth and Home		July 13.		£1 1s., 15s. and 7s. 6d.		Open only to <i>bonâ-fide</i> amateurs.
" "		Aug. 10.		"		" " "
" "		Sept. 7.		"		" " "
3. Barnsley Chronicle	Sept. 30.	Sept. 30.			None. 2 A.	Open only to <i>bonâ-fide</i> amateurs. Prints must be accompanied with coupon from <i>The Barnsley Chronicle</i> .
4. Royal Cornwall Polytechnic					14 P., 6 A. None open.	All work sent in for competition must have been executed within eighteen months of date of exhibition.

Secretaries:—(1.) E. GREENLEAVES, Priory Mansions, Bath Road, Bournemouth.

Judges:—(1.) H. SNOWDEN WARD. (3.) H. SNOWDEN WARD.

A—Amateur. P—Professional. G—Gold Medal. S—Silver Medal. B—Bronze Medal. C—Certificate.
Cm—Complimentary Medals given to every exhibitor whose work is hung.



1. "Beginners' Guide to Photography." 6th edition. Price 6d.; post free, 9d. London: Perken, Son & Rayment.
2. "View of St. Bartholomew the Great." Price, post free, 1s. By Freeman Dovaston. Published by Freeman Dovaston, 5 George-street, Euston-road, London.
3. "Photographic views of the great cyclone, at St. Louis." *St. Louis Chronicle*, St. Louis, Mo. Price 50 cents.
4. "Photographic Amusements." Price, paper covers, 4s. 2d.; cloth, 6s. 3d. The Scovill & Adams Co., 60 to 62 East Eleventh St., New York, U.S.A.
5. "Exposure Tables for Photographers." Calcutta: Thacker, Spinck and Co.
6. "Cyclopædic Photography." Compiled by Dr. Edward L. Wilson. Price 7s. 6d.; post free, 8s. London: Dawbarn & Ward, Ltd., 6 Farringdon-avenue, E.C.
7. "London's Great Legacy." Epping Forest; described by pen and camera. London: Thomas Mitchell, 48-50 Aldersgate-street, E.C.
8. "Modern Optical Instruments." Whittaker & Co., 2 White Hart St., Paternoster Square, E.C. Price 2s. 6d., post free 2s. 9d.
9. "Practical Radiography." Price, paper covers, 1s.; post free, 1s. 1d.; cloth covers, 1s. 6d.; post free, 1s. 8d. Dawbarn & Ward, Ltd., 6 Farringdon-avenue, E.C.
10. "The Bichromate Salts in Photography." Six lectures before the Affiliation of Photographic Societies. Price, 1s. net; post free, 1s. 1d. London: Dawbarn & Ward, Ltd., 6 Farringdon-avenue, E.C.
11. "The Elements of a Pictorial Photograph." By H. P. Robinson. Price 3s. 6d.; post free, 3s. 9d. Bradford and London: Percy Lund & Co., Ltd.

That Grand Old Journal, *The Scientific American*, completed its 50 years of life on July 23rd, and marked the event with a great double number.

New Ground in Norway.—A reproduction of sixty of Paul Lange pictures, with matter by E. J. Goodman, is announced by George Newnes & Co.

Postage-stamp Portraits at very low prices, and from any negatives supplied, are now made a speciality by Josiah Pumphrey, of Birmingham, who also makes negatives for printing these portraits for the trade only.

The Animals' Friend makes considerable use of photography, and has just closed a successful amateur photographic Competition. The competitions are to be continued, and the Editor is prepared to run special classes on behalf of readers who wish to encourage the photographing of given species of animals.

If any of our readers have views of London Town that are typical and artistic without being hackneyed subjects we shall be very pleased, indeed, to see prints of such as we may be permitted to reproduce. We also remind our readers that we wish to see all the good things of the year for selection for *Photograms* of '96.

London Town will be treated as a Beauty Spot in our next issue, and in view of the importance of the subject the issue will be specially enlarged. The real and varied beauty of London, too little recognised by most people, will be illus-

trated by examples by many of our best workers. The regular features of the magazine will be more than ordinarily interesting.

George Timmins, President of the Syracuse (N.Y.) Camera Club, has long been making a thoroughly representative collection of the best photographic work of the world without reference to date of production. He has secured nearly 300 prints from over 80 workers in all parts of the world, and placed them on public exhibition for a week. They will be usually kept in his own residence.

Photique Art Pictorials are being placed on the market by a firm of which the moving spirit is Frank F. T. Weeks. His idea, which is patent, is to make a combination of photographed figures with elaborate backgrounds and accessories painted on the print, an example of which was given in our issue of March, 1895. Mr. Weeks is building a special studio for the purpose.

Photography Checks Art in a very interesting manner in a series of articles on "The artistic study of waves," by Vaughan Cornish, M.Sc. now appearing in *Knowledge*. A collotype reproduction of a specially fine photogram, by Worsley Benison, appears in the copy which happens to lie before us (July) and is used in comparison with reproductions of some well-known paintings.

A correction.—We much regret that two of the blocks illustrating Harold Baker's article "Architectural Notes for Photographers," in the July issue, were wrongly placed, the one marked "No. 16, Berkswell" is Pershore Abbey, and No. 17, marked Overbury, is the west-end of Tewkesbury. The last-mentioned one (Tewkesbury) should have come into the current issue, but as it was inserted last month, we have referred to it only.

A lavish use of Photography is made by *The Cycling World*, the new journal de luxe for cyclists. In a number before us almost all the work, and wonderfully good work too, is by R. W. Thomas, of Cheapside, London, who has made a specialty of the photography of cyclists. The pictures are reproduced by the Acme Tone Engraving Co., and are printed in a rich slightly purple ink, giving a total result that is very effective indeed.

A Sale of 50,000 copies of a technical handbook is a pretty good guarantee that it is thoroughly appreciated. The "Beginners' Guide" (1), issued by Perken, Son & Rayment, has reached this sale with its 6th edition. It is too well known to need much comment. It is a well-written and comprehensive guide of 120 pages, bound cloth, for 6d. In addition it has nearly as many pages of catalogue of the apparatus made by the publishers.

Some magnificent architectural photography is included in a little book of views of St. Bartholomew the Great (2), just published by Freeman Dovaston, a man who will assuredly make a great reputation if he continues his present specialty of architectural photography for publication. Comparatively few of our country cousins, or even of London residents, know of this fine old

church, which exists a little more than a stone's throw from the Post Office, and which contains some of the finest Norman work in the country.

"Beautiful Sydney," an interesting and enterprising publication, is notable for some 120 pages of very good collotype work, by F. W. Niven & Co. The book gives particulars of Sydney and neighboring towns, with illustrations of the public buildings, picturesque spots in the neighborhood, etc., and devotes a good deal of its space to notices of business concerns, arranged in similar style to the rest of the matter. Every right-hand page is a collotype, and most of them consist of several subjects arranged as mosaics, and surrounded by very effective wash drawings.

Destruction and Enterprise are both ably represented in an album of views taken the morning after the great cyclone, at St. Louis. (3) Strauss is the photographer, and the *St. Louis Chronicle* issues the volume, which is a wonderful proof of the power of illustration as compared with the feebleness of description. The pictures show, in a way that the most graphic reports could not, the terrible devastation caused by the storm. Acre after acre of large and powerful buildings are wrecked in a way that the most destructive fire could not have equalled, and the plain, unvarnished tale told by the camera has a value that is all its own.

Freak Photography has been so largely dealt with in the last few years that it seemed impossible to get much that was new upon the subject into a book issued at the present time. Walter E. Woodbury has undertaken the task, and has produced a thoroughly interesting volume of 114 pages, with over 100 illustrations (4). Of course, the bulk of the matter is old, but the book contains a number of freaks that have not, so far as we know, been collected into one volume before. Many a professional might do far worse than buy this book and take up one of the freaks per month, showing a series of examples in his window. For amateurs, too, who love to astonish their friends by *tours de force*, the book should prove invaluable.

Photographers in India will appreciate a book of exposure tables specially prepared for Eastern lands (5). They are by George Ewing, who has previously written an excellent handbook of photography for Indian amateurs. The book of tables is divided into three sets: one for work near the equator; one for north latitude 23° or thereabout, and one for north latitude 30° or thereabout. The book is well got up, and is provided with several pages of faint ruled note-paper of very much better quality than is generally found in such publications. The only point to which we can possibly object is the table of speed numbers which is given by the Warnerke scale, and is not so complete or so accurate as might be wished.

"Cyclopædic Photography" (6), Dr. Edward L. Wilson's great compilation of photographic figures, facts and formulæ, is just re-issued, the second (British) edition, at the greatly reduced price of seven shillings and sixpence. The book has already made its reputation, and the very substantial reduction of price (to nearly half)

should make it the companion of every photographer. Especially should this be the case since the new edition is no way inferior in quality to its predecessor, except in the matter of binding and gold edges. The new binding is just as serviceable as the old. As to the contents little need be said. They include matter on every department of photography, and are copiously illustrated with working drawings, etc.

Journalism and Photography go hand in hand, and in nothing is this better illustrated than in a series of books being published by Thos. Mitchell, Aldersgate-street, and prepared by a gentleman who is a photographer, as well as an author. The book for this year is entitled "London's Great Legacy" (7), and describes Epping Forest in an extremely interesting style, with no less than forty-four full page half-tone illustrations from photographic originals. Many of these are real pictures, and we can only regret that the reproduction is not fully equal to the original photographic work. The block-making might be somewhat improved, and the printing leaves very much to be desired. In spite of these drawbacks the book is a good one, and should lead many London photographers to visit this very charming district.

We received last month from Count Turati a small edition of prints by his new process Synchronie. By this really wonderful process an almost unlimited number of different tints can be printed at one impression, so that it may well be spoken of as the high water mark of photo-mechanical work up-to-date. We are proud to be thus able to present the first example of this work to British readers, and we think that the supplement alone is well worth the sixpence charged for our process edition, of which a few copies of the July issue still remain. We have arranged with Count Turati to let us have an edition of synchronic prints for an whole issue of *The Photogram* as rapidly as he can possibly get them printed, but with his comparatively small experimental installation, this is a process taking considerable time.

Editorial Changes.—It is an open secret—or a half-open secret—that from the 1st of July *The Photographic News* is under the editorship of E. J. Wall. We regret to lose his assistance from *The Photogram*, as during the few months that he has been our colleague he has done some very good work for this journal. Still we rejoice at his promotion, and trust he may take *The News* ahead as rapidly as its late editor has done since its resuscitation some six months ago. The late editor and the late business manager of *The News* have formed a partnership under the style of Brooks & Marshall, of Temple House, Temple Avenue, E.C., and have started a new paper entitled *The Photographic Dealer*. This covers an entirely new field and is very strictly confined to the "trade only." For 2/6 a year it will be sent post free to those who enclose their trade cards in proof of *bona fides*.

Modern Optical Instruments are treated in a book (8) by Henry Orford, who is already well known as the author of a capital little handbook on "Lens work for Amateurs." Curiously

enough, a considerable portion of the present book is devoted to the human eye, which one might be inclined to consider a somewhat ancient optical instrument, but this introduces the use of several ophthalmoscopes, retinascopes, spectacles, etc., which obviously come well within the title of the book. This portion of the book is scarcely of interest to photographers *per se*, but the last four chapters, which deal with Anderton's stereoscopic projection, principles of the optical lantern, the stereoscope, and the spectroscope, are more directly interesting to our readers. Even the earlier part is valuable to those who wish to understand the theory and the physiological principles that underlie their work and that enable them to compare it with visual effects.

Practical Radiography (9) just issued by ourselves is, so far as we are aware, the first practical handbook of the applications of the X-rays published in any language. There have been several books dealing more or less fully with Röntgen's discovery, and giving examples of the results on pretty much the same lines as our own special issue *The New Light*, but none dealing with the practical work. With regard to this little handbook we owe an apology to Dr. J. Macintyre for printing his very beautiful radiogram of the living heart upside down. It is rather curious that we reproduced this from a lantern slide, the maker of which (to judge by his spotting) was evidently of the same opinion as ourselves as regard to the position, and that the slide has been shown at various lectures attended by large numbers of medical men without any of them pointing out the error. Even those who may not intend to personally take up radiographic work should be interested in the simple instructions.

The Fabian Society wishes to obtain free lantern slides for use in its propagandist work, and suggests the following subjects as being those which are likely to be most immediately useful:—

Suggestions for Slides.

Slums and Slum Life—Slum dwellings in towns, Insanitary cottages in villages (exterior and interior). **Life and Labor**—Typical Factories, Typical Factory Hands, Docks, Unemployed at Dock Gates (Liverpool, Cardiff, Southampton, &c.); Mines and Miners, Mining Village, Pottery Towns (Longton, &c.), Scenery round pottery town, Cradley Heath Chain Makers, Street Sellers. **Municipal Developments**—Any advance such as Leicester Abattoirs, Glasgow Trams. Figures for Diagrams, Wages and expenditure of typical poor. Any other subject.

Probably some of our readers can assist, and if so, they should write to the secretary, whose address is 276 Strand, London, W.C.

The Bichromate Salts and their uses in photography and photo-mechanical work (10) were very fully treated in the recent series of lectures delivered before the Affiliation of Photographic Societies. These lectures have been printed and made up in pamphlet form for general sale. The little book is handled on behalf of the Affiliation of Photographic Societies by our publishers. The first lecture is a scientific

and historical preliminary by Capt. W. de W. Abney, which gives in outline all the bichromate processes of early days, and should be valuable as a preventive of re-discoveries, and also as suggesting to present-day investigators many of the applications that have already been tried and superseded. Lecture 2 on "Carbon Printing," by J. A. Sinclair, F.R.P.S., gives working instructions for the ordinary carbon process, and also for the Artigue non-transfer process. In the third lecture collotype is carefully and practically treated by W. E. Debenham, and a number of practical hints which will be new even to many professional collotype workers are given. J. D. Geddes, the principal of the photo-mechanical department of Waterlow and Sons, describes Woodbury type-printing, and briefly mentions Woodburygravure, a modification of the process recently introduced by Waterlows. The last two lectures are by W. T. Wilkinson, and treat of photo-lithography and photo-zincography in one case, and of general applications of bichromate salts in the other. All through the lectures carefully tested working formulæ are given, and the book, though very small, may be considered a standard work on bichromate processes.

The Art side of Photography is very carefully treated in an excellent and helpful book by H. P. Robinson (11), who devotes twenty-one chapters to the subject, and illustrates his points with a large number of reproductions of his own works, and a dozen line blocks after Birket Foster. It has been stated that none can write on the art side of photography without making his book a piracy of John Burnet or H. P. Robinson; but the volume under notice proves this to be quite a mistake, for the matter is fresh as well as readable. A specially valuable chapter is the one in which the writer commends the study of Nature as a basis for art work, and pleads for actual as well as pictorial truth. It is rather curious, though, that one of his examples of painters' errors is the representing of May-day with the hawthorn in bloom. In saying that the "may" does not appear "until long after the first of the merry month," Mr. Robinson probably forgets the spring of '95, when the hawthorn was fairly in bloom before April left us. In another place, Mr. Robinson says, "taking advantage of other men's pictorial ideas, is no more art than American piracy is authorship." We do not quite understand the inclusion of this word "American," unless Mr. Robinson wishes to suggest that British, or any other piracy, is justifiable, and only American piracy to be condemned. These are small blemishes in a book with very many good points. On "The Limitations of Photography," including the nude, Mr. Robinson writes well and with conviction, summing up the argument in the following words:—"The nude has no excuse if not beautiful; the modern nude is not beautiful." The book will add a lustre to Mr. Robinson's established reputation, and will be read with great pleasure by the thousands who have appreciated and profited by his previous works.

Think of your friends and buy an extra copy of the next issue of *The Photogram*, which will be specially enlarged and beautifully illustrated with views of London Town. No increase in price.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention "The Photogram."

New Advertisers.

C. C. Vevers, Leeds.
Maxwell Bayes & Co., Gainsborough.
Jonathan Fallowfield, 146 Charing Cross-road.
Frederick Jenkins, 46 Farringdon-street.
Harrington & Co., Ltd., Sydney.
Whittaker & Co., Paternoster-Square.
"The Art Printer," Weston-super-Mare.
Martin & Co., New Southgate, N.

New Goods, &c., Advertised.

Vevers' "Featherweight" Double Slides. C. C. Vevers.
"Reliance" Photographic Mounts. Maxwell Bayes & Co.
Book Illustrations and Reproductions. Fredk. Jenkins.
Process and Photographic Materials. Harrington and Co., Ltd.
Twin Lens Cameras. Ross & Co.
"The Optics of Photography." Whittaker & Co.
Enlarging, Printing and Copying. Martin & Co.
"Stereo Photoduplicon," and Hand Cameras. J. Fallowfield.
Snapshot Plates and Film. B. J. Edwards & Co.
The Vitagraph. Clément & Gilmer.
"Cyclopadic Photography" (New Edition). Dawbarn & Ward, Ltd.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk () indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.*

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

"Walnotine" Developer. 1s. 3d. per case; post free. 1s. 9d. Walnut and Co., 917 Garscube-road, Glasgow.

No. 3 Primus Camera. July 10. Price: quarter-plate, £4 15s.; 5 x 4, £6; half-plate, £7 7s. W. Butcher & Son, Blackheath, S.E.

The Radiant View Finder. June 30th. No. 1, 7s. 6d. each; No. 2, 10s. each, including fixing screws. Marion and Co.

The London Camera Co. has taken over the premises and plant of T. Naylor, 13 Greek-street, Soho-square, W.

Hurst & Co., electricians and makers of induction coils, have removed from 66 Fenchurch-street to 51-53 Leadenhall-street.

"The Australian Photographic Journal" has removed its offices from 332 Kent-street to more central premises at 66 King-street, Sydney.

Watton & Walwright, of 38 Great Queen-street, W.C., have removed their warehouse and office to their factory, at Croydon, Surrey, where they will be glad to have all orders and communications addressed.

Special fine grain plates of a very considerable rapidity (40 to 50) H. and D. are offered by the Imperial Dry Plate Company in their ordinary series and at ordinary prices, the plates being of the appearance of lantern plates with a thin granulous, translucent emulsion, which, however, has great sensitiveness and gives ample density.

Two hundred happy folk joined the picnic of the Thornton-Pickard Company on Saturday, June 27th. Southport was the destination, and a thoroughly pleasant day appears to have been spent.

As a Special Cyclists' Camera, primarily intended for use on a stand, but conveniently arranged for occasional use as a hand camera, is the No. 3 Primus made by W. Butcher and Son, of Blackheath. It has a hinged spring focussing hood to protect the focussing screen when out of use, rack work extension for lens of varying focus, rising front, Thornton-Pickard shutter, and rapid rectilinear lens, with Iris diaphragm. The dark slides are a special feature, exceedingly light and thin, and the whole camera is leather covered, so that it requires no separate case.

The Radiant View Finder (Marion and Co's patent) is an excellent finder for hand or stand cameras. The block illustrates pattern No. 2 with the finder in separate parts, for fitting to a hand camera inside the case, but it is also supplied in a metal case of its own for use with an ordinary



camera, or when prospecting without camera. It consists of a plano-convex lens, from which the image falls on a prism having two plane surfaces and one convex. This gives a very brilliant and non-inverted image without any necessity for using hood and cover of any sort. As there is no silvered reflector there is nothing liable to deteriorate.

Walnotine, a developer for plates and bromide paper, seems likely to prove very useful. The makers claim that it can be used to good purpose for negatives, slides and bromide paper. In our test it gave the paper rather a greenish tone, but for the plates it worked well, and is especially adapted for under-exposures. It acts rapidly and energetically, but if carefully restrained ought to be a great help to workers requiring a developer in a hurry, and for beginners. The latter should be cautioned to use it well reduced. The directions given with it are simple and easily carried out. The alum bath after fixing is recommended, and we suggest the addition of a few drops of sulphuric acid when plates are being developed. With bromide paper the usual acid cleaning bath will suffice.

CATALOGUES.

RADIOGRAPHIC APPARATUS is dealt with in a special price list of F. C. Allsop, manufacturing electrician, 97 Queen Victoria-street, E.C.

"THE PARASTUDIO" is a little book of hints on using the apparatus of this name. The inventor tells us that it can be used not only as an outdoor studio but also as a bathing tent, summer house, lawn umbrella, etc.

THE NEWMAN AND GUARDIA catalogue is a complete art gallery of photographic work, and if this sort of commercial book-making continues, we shall find in trade catalogues very serious competitors with our "Photograms of the year." The list just issued and priced at 1s. contains 69 half-tones from photographic originals, most of which may claim artistic merit, and all of which are of very distinct interest. In addition to this there are particulars of the N. and G cameras and numberless accessories.

SPRATT BROS., of Hackney, send an excellent catalogue of their high-class cameras, which are supplied to the trade only, with an additional list of tripod stands and sundries, which are made in very great variety. With this they have sent us a sample of their latest half-plate and stereoscopic camera which is equal to the best American work in design and arrangement, and equal to the best British in workmanship, selection of wood, and finish. One of the most important improvements in this apparatus is arrangement of the base of the swing front. The base of the front has two separate pins at each end, each of which engaged in a little slot but neither of which is fixed there, so that the fixing or removing of the swing front takes place almost instantaneously, and a very free swing is given by simple and thoroughly practical mechanical means. To those who love universal motions this camera should appeal very strongly indeed. Amongst the tripod stands there are a number of new patterns including some wonderfully good four-fold stands with metal fittings and patent catches, etc., as well as all the well-known standard patterns of tripods. The list announces that all these tripods can be had with aluminium fittings and tops, and the wearing parts in phosphor bronze for a reasonable extra charge.

Radiography.

Small Apparatus.—J. W. Gifford, of Chard, writes us that he is now making all his radiograms of ordinary subjects (hands, etc.) with exposures of one minute, using only a 1½ in. spark coil.

X-Rays in Sunlight.—Dr. Emmens claims to have discovered the presence of the rays in sunlight and objects exposed below a vulcanite sheet for thirty-six hours, gave images which he says are not due to heat.

Cathode Rays.—It is shown by Prof. J. J. Thomson that a plate enclosed in a vacuum tube is not acted upon by the cathode rays produced in the tube. This may be due to the absence of oxygen in contact with the plate.

Prof. Arthur Goodspeed, of Philadelphia, has reduced the exposure to the X-rays through the body of a full-grown adult to one minute. He is working with a 16 in. spark coil, current of 3 amperes, a tube fifteen years old, and Carbutt's X-ray plates.

Fluorescent screens may be improved (according to F. J. R. in *The English Mechanic*) by adding a small proportion of some deliquescent salt to the platinocyanide. If this is not done, the brilliancy may be improved by slightly damping the screen.

The Guy's Hospital Reception was quite a collection of radiographic workers. George Houghton & Son had no fewer than five sets of apparatus in action with different demonstrators, and three other demonstrators with their own apparatus were also present.

W. Watson & Sons have issued a leaflet of instructions for using their Röntgen apparatus. They have also placed on the market an economical arrangement, including a Tesla coil and accessory apparatus for repeating many of Tesla's experiments, or for use in radiography.

Phosphorescence of the glass is of no use. It shows the tube is working well, but takes no other part in the production of the X-rays. If from fatigue the glass ceases to fluoresce so strongly, it does not imply that the tube is not producing the X-rays as well as ever.

A New Tube has been designed and pronounced a great success by J. W. Gifford, of Chard. Instead of introducing an anode into the tube, he has made the anode a platinum window fused over an opening in the glass, a form of tube which has given exceedingly rapid exposures.

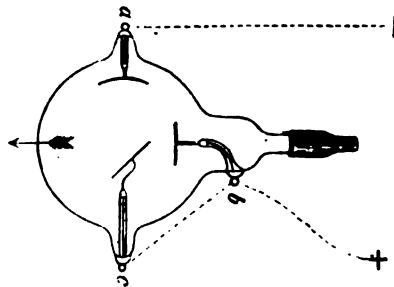
Radiography as a business is being taken up all over the country. Not only are professional photographers going into it, but some amateurs also. V. E. Johnson, M.A., F.R.M.S., Alderley Edge, near Manchester, asks us to intimate that he is prepared to lecture and demonstrate, and to undertake surgical cases.

Special Foot Rests, shoulder supports, etc., are offered by W. I. Chadwick, of Manchester, who is industriously pushing the surgical applications of radiography. When in London the other day Mr. Chadwick showed us a large series of surgical results, many of which were of the greatest possible interest.

Uranium Rays.—M. Henri Becquerel has found that the radiation emitted by certain uranium salts is analogous to the X-rays, as they can affect a photographic plate through aluminium, wood, etc., but they have the property of being polarised and refracted. Potassium uranyl sulphate is the most remarkable.

For Lecturers, the little catalogue issued by W. I. Chadwick, of Manchester, will be specially useful. In addition to the usual lantern slides of examples of radiography, he has twenty-four special illustrations of electrical phenomena in vacua, and portraits of some of the leading X-ray workers. He also lists a very complete collection of tubes for showing experiments in radiant matter, and gives practical hints on radiographic working.

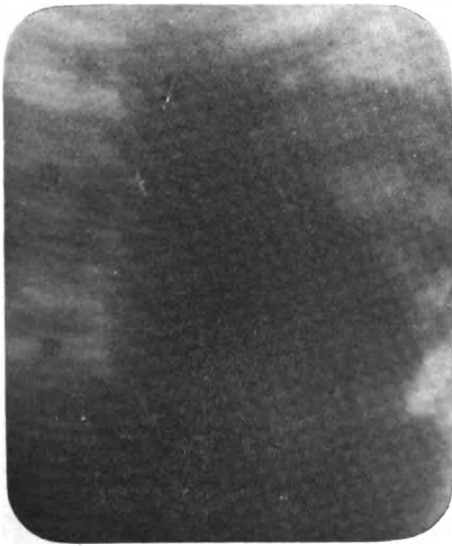
A New Tube, introduced by Hurst & Co., and one with which we understand that they have obtained exceedingly fine results, is illustrated in the sketch. It will be noticed that it has two



anodes. When starting the tube, the cathode A and anode B are wired up in order to "get the tube in working order." After running for a few moments in this way a bridge connection is placed across from B to C, so that in use the tube works with both anodes.

A Developer that is strongly recommended, consists of Thomas's standard hydroquinone formula, plus two grams of rodinal to the ounce.

Magnetograms.—Prof. J. McKay has found that if a plate, upon which are placed various objects, is suspended to a strong electro magnet, with a thin piece of wood between the objects and the poles of the magnet, images are produced with five minutes exposure. The approach and removal of the armature decrease the exposure. He remarks that the change of magnetic force, due to motion of the armature, or variation of current strength, originate other waves capable of affecting the plate. It seems, to us, possible that the effect may be due to heat generated in the iron of the magnet; but this can only be proved by subsequent experimenting.



THE LIVING HEART.

By Dr. J. Macintyre.

An absolute vacuum tube is said to be used by Prof. E. Elmer Gates, of the Washington Laboratory of experimental psychology. A tube of hard potash glass with a very high fusing point, is filled with a much softer glass in molten state. When cold, a powerful pump is attached to the open end of the hard tube, which is then heated until the soft glass is molten and can be drawn out by the suction of the pump. Enough of the softer glass is left in the neck of the tube to seal it on cooling. Prof. Gates places this absolute vacuum tube in a magnetic field and projects through it polarised light. The light becomes non-luminous, capable of passing through many opaque substances, and of producing photographic effects. There is no fluorescence in the tube, and the rays are not X-rays, since they can be reflected and refracted. With them Prof. Gates "photographed several planets and found that they showed entirely different workings than

when photographed with ordinary non-luminous rays." At least, so says *The National Recorder*.

In Setting Fractured Limbs it is an immense advantage to be able to see the position of the bones on the radioscope, and it seems probable that in the early future, any surgeon who attempts to set a fracture or reduce a dislocation without this assistance, will be held responsible for negligence in his profession. A curious case came under our notice the other day where the surgeon had a leg radiographed some time after setting it. He found to his surprise that his work had not been properly done, as the ends of the bone had not been drawn into their proper positions, and a juncture had taken place with an overlapping of about half-an-inch. As the ossification had proceeded satisfactorily to a certain point, it became a question whether it was wise to re-fracture and re-set the bone, or to allow the patient to go through life with one leg half-an-inch shorter than the other. Finally the patient decided on the latter course, but, probably, blames the surgeon for not having applied the radiographic search light at an earlier stage.

Vacuum Tubes.—We have had a good many complaints about the quality of vacuum tubes supplied to our readers by various firms. In some cases where the tube has been sent that we might investigate the difficulty, we have found it work perfectly, thereby showing that the error evidently lay in our readers' manipulation. In some cases it was evidently due to the attaching of the tube wrong way round; the result of which in the focus pattern is the disintegration of the platinum, which deposits on the glass in fine particles and tends to reduce the vacuum. With this form of tube, workers must always be extremely careful to make the platinum end the anode. At the same time we are aware that some dealers are paying extra wholesale price in order to have the right of selecting the best tubes from the makers' stocks, and that the tubes rejected by these dealers are being supplied to others. Hence it is possible that inefficient tubes may get into circulation, and it is therefore advisable to obtain supplies from dealers in whom the purchaser can thoroughly rely, or to see the tube actually in work before purchasing.

Thermographic Effects have reached us recently in considerable numbers, and we regret we cannot refer to all in detail. In the thermogram produced by F. J. Cribb, the objects were placed in contact with the dry plate, the exposure being $1\frac{1}{4}$ hours to the light and heat of an incandescent gas burner, at 9 inches distance. By placing a negative in contact with the plate, and giving a similar exposure at a distance of 12 inches through a thin sheet of copper, Mr. Cribb secured a fairly exposed positive. These are typical of many other results, and we would suggest that readers who are repeating this work should look up Hunt's chapter on thermography, and should send to us not the results of first experiments, but after series of experiments, in which the different factors are successively eliminated. Prints of metallic objects, and of a dead fish, made apparently by a curious mixture of electric current, heat, and pressure, affords an unusually

good example of results that require further investigation by an elimination of factors. In such case, if the experiments are successfully repeated without the use of light, it becomes obvious that the light is not necessary. If, then, the electric current is eliminated, it is obvious that that is not necessary. If results are due to light or heat action proceeding from an incandescent gas burner or magnesium ribbon, they should act even when the objects are not in actual contact with the plate. The mere production of phenomena is useless, and experimenters should now aim at patient scientific investigation, with a definite intention of discovering the causes underlying the phenomena.



Be Brief!—We reserve the right of condensing all correspondence, but undertake to leave the meaning intact. Personalities barred. Whenever a man is attacked by name, we wait until a proof can be sent, and the attack and reply published together. Anonymous letters are strongly objected to, and those which are not accompanied by name and address of writer, for our own information, go into the W.P.B.

X-rays in Sunlight.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—Mr. Porter, of Eton College, appears to have discovered two kinds of X-ray, which he designates by X^1 and X^2 . The former predominating when the tube is cold, and the latter when the tube has been heated by artificial means. He finds that the X^1 -rays fleshy matter and aluminium more readily than X^2 -rays, the latter, however, are more energetic. I think, however, that the X^2 -rays are simply a modification of X^1 -ray, due to the applied heat, and that the comparatively feeble action of these rays emanating from sunlight is due, probably, to the modifying action of the heat-rays accompanying them. It has long been known how strongly the red ray affects the phenomenon of phosphorescence, and Mr. Porter's experiments would appear to point to the same conclusion.

Yours faithfully,
D. E. PACKER.

A New Background Paint.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—Knowing that you like to put everything that is novel and new upon the market before your photographic readers generally, I beg to call your notice to a new thing of the utmost utility to all photographers, as being artistic, economical and thoroughly sound, for the painting of studio interiors, backgrounds and accessories, as I have fully proved; it is the new Wapicti distemper colors, just put upon the market by Aspinall's. It is washable and devoid of smell (which cannot be said of the old ordinary distemper), and there are a vast number of colors. But I would especially recommend to photographers Nos. 102, 107, 109, 110, 111, 112, 127, 128 and 141, being highly effective for the purpose of studio decoration, and as an old scenic artist I can commend them to all who desire to touch up or repaint their studios, etc.—"PHOTIQUE-ART."

Painters' Studies.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—I am away from England, as you see, and it is only by an accident that your last number has fallen into my hands yesterday, but I have read with extreme interest your article on "Photographic Studies"—a subject

in which, as an amateur photographer, I take the very keenest pleasure. I am entirely of your opinion that continual study, especially of the figure draped and undraped, is as important to the photographic illustrator as to the artist who employs any of the older methods; but there is one point that occurs to me, and that is in connection with the not-to-be-too-often-remembered fact that perspective in the lenses of the eye is not the same as that of the lens of the camera, i.e., that a plate acted upon by a lens fixed at a given focus produces different and often totally opposite effects of perspective to those given to the human brain by the constantly changing foci of the human eye. Here, I would suggest, comes in the very great importance for the artistic photographer of a specially careful study of the human figure, not only from life, from the round, and from paintings or drawings by distinguished artists, but also from photograms, and above all, from photograms from the *nude*; for it is only from photograms of the *nude* model that one can fully realise the grotesqueness of many effects that the clothes of a sitter, or the drapery of a clothed model, conceal or modify so as to be nearly invisible.

Since I have been in Italy I have had the good fortune to make the acquaintance of the two most celebrated photographers from the *nude*—Count William von Gloeden, of Taormina, and Signor Pluschow, of Rome—and from a careful study of their work, and comparison of effects produced by them, I have learnt much that is extremely valuable to me. I would submit that for the artistic photographer, no matter whether for ordinary professional work or for book illustration, some such careful study is absolutely indispensable, as he may thus learn to avoid, by the experience of others, many faults not obvious at first sight—the disagreeable effect of a badly arranged shadow, or an awkwardly posed limb. I myself have, in a humble way, made a variety of studies in this way, which I should always be glad to place at the disposal of students; and I have no doubt that the numerous other gentlemen who are, I know, interested in the same subject would, if asked, do the same. Photographically, perhaps, they are scarcely beautiful, nor fit for exhibition or competition, but as lessons in what to avoid and what to attempt in the arrangement of light and line, I submit that they have a certain art value.

In this matter the articles contributed to your magazine by my friend Mr. Gleeson White have been a great help and encouragement to me. Both Count von Gloeden and Signor Pluschow, especially the former, have shown me much kindness, and their work is, I think, hardly treated in England with that serious consideration that it undoubtedly deserves. One criticism I would, however, venture to make with regard to their work, and that is that in attempting to produce a generally artistic picture as a whole, whether clothed or nude—in which attempts they no doubt have had phenomenal success—the use of accessories, plants, flowers, draperies, etc., and often a somewhat overdone pose of the figures, mars to some extent the educational value of the photograms, inasmuch as the eye is thus withdrawn from faults in "drawing." This, of course, is more noticeable in the *nudes*, where, in my opinion, the fewer the accessories the better. Apologizing for the length of this letter,—I am, believe me, very faithfully yours,

ROBERT H. HOBART CUST.

Villa Barbaja, Naples, June 19th.

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THE PHOTOGRAM

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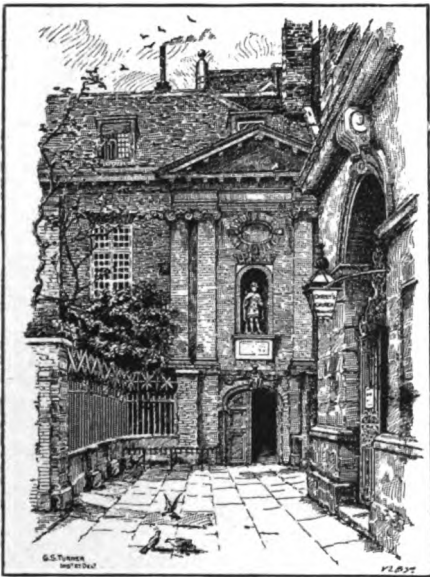
No. 33.

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Beauty Spots.

No. VI.—London Town.

By HALLTON EAST.



CHRIST'S CHURCH.

Sketch by G. S. Turner, from photograph by Freeman Dovaston

London fog—which mellows the harsh tones, and softens the sharp outlines. Not that there are many harsh tones in London, for the kindly smoke soothes down man's crudities. But the haze is an invaluable helper to the picture-maker, though photographers have not yet appreciated it. With the morning haze, in any month from October to March, the streets and squares present, to the seeing eye, pictures such as no other city in the world can duplicate. Paris, Rome, New York, Liverpool—all have their own characteristics, but none have this particular London charm. Take a W. or S.W. street, or one of the smaller streets across the river, on a hazy morning such as that of which I speak, and there is good work to be done. A typical example—one of the best—is Exhibition-road, South Kensington. The thin mist lies low. Looking up the road, from near the foot, one of the light-holes of the exhibition sub-way makes a heavy strong mass, breaking the foreground. Another, less distinct, carries us back into the picture. The lamp-posts, curb-stones, railings,

MY LIMIT is “within seven miles of the G.P.O.,” and what a wealth of beauty, and history, and romance, is comprised within that limit. No other spot on earth presents such beauty in such variety within such an area. The subject is too large for any mere magazine article. Its very vastness is appalling—perhaps that is why London, with all its charm, with all its mystery, still lacks its special poet, and painter, and photographer. The artist, in whatever line, who will make an earnest and intelligent study of only one of the many phases of our metropolitan life, has fame within his grasp.

I shall say little of the well-known “show-places,” for the less known objects are so much more interesting to the picture-maker. In fact, the country cousin who spends a fortnight in London seeing “the sights” does not begin to appreciate the real beauty of the place.

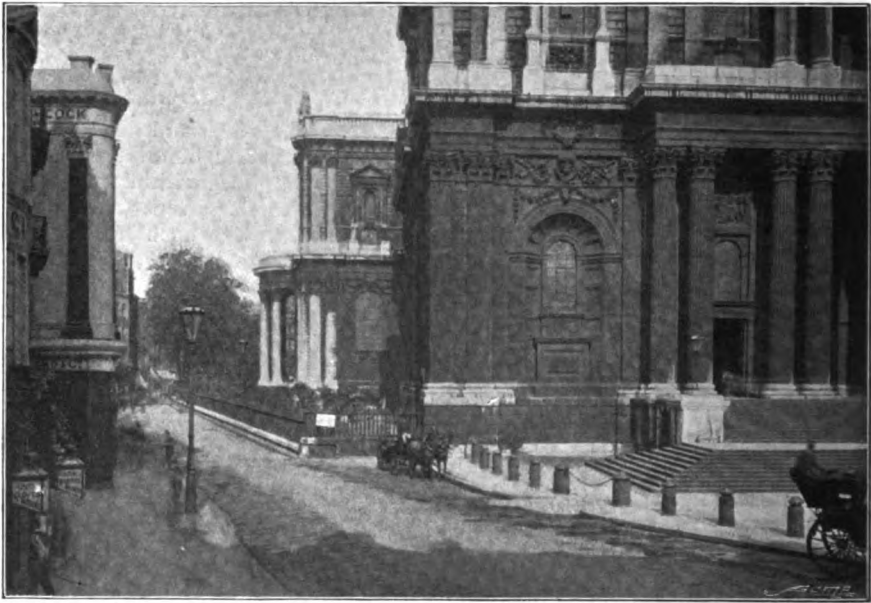
Foremost amongst the special charms of London is the haze—not the oft-abused

and near buildings gradually soften, and in the misty distance looms the great South Kensington school building.

Another curious and wonderfully picturesque scene is to be found—about March or October, in Eyre-street, Clerkenwell-road. Here, in a thickly-populated slum, live hundreds of Italians—organ grinders, hot-chestnut men, ice cream vendors, etc. Here, when chestnuts are in demand, the men may be seen about 7.30 a.m., lighting their charcoal braziers. In the thin mist that almost obscures the top of the street, the smoke from half-a-dozen or more braziers curls lazily into the air. The men who tend the fires are picturesque in their semi-undress, and round the doorways lounge the women-folk. It is a scene to be ever remembered.

obtained by narrow streets and dark alleys off Thames-street. This district, including Billingsgate, the Tower, the old city churches with their lime trees growing round them and pigeons nesting in the belfries, is full of surprises, and well worth serious study. And speaking of the Tower reminds me of the promenade on the river front of that building, from which there are innumerable chances of shipping studies, atmospheric "effects," and views of the beautiful Tower Bridge.

Even when daylight dies the river does not lose its charm, but from many of the bridges, as well as from the Thames Embankment, the lights of lamps and windows and moored boats make very beautiful pictures. These night scenes have been greatly neglected by photographers, for no very



NORTH-WEST PORCH—ST. PAUL'S.

By Freeman Dovaston.

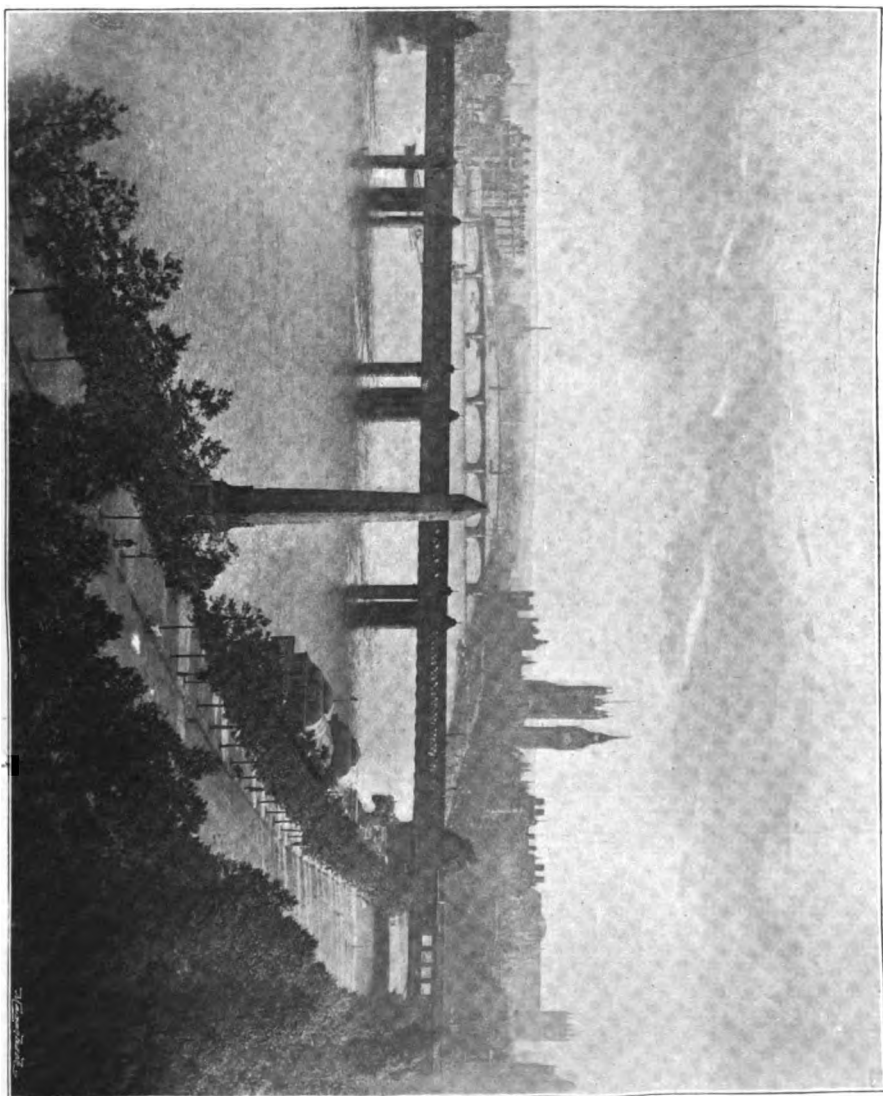
I will mention but one other phase of the thin mist, the haze on the river. From any of the bridges, from the Embankments, every few yards presents a new picture. The work is eminently photographable, yet no one has seriously studied it.

The river! The very mention calls up such a wealth of artistic possibilities as London photographers roam over half a continent to find. The Pool and the reach just below London Bridge, with their endless changes of shipping and lighters, their wonderful effects of sun and smoke and cloud, are fairly well known by the excellent work of the few; but are still far from being exhausted. If you have the nerve to photograph from a small boat, under charge of a Thames waterman, you need envy no one his trip to Venice or Rome; and if you prefer solid earth there is still much to be done from the wharves, to which admission is

good reason, since there is no great difficulty about making the pictures. George Davison—if I remember rightly—had some very charming sea-side lamplight effects in the last Salon, and Walter Edmunds showed some London examples.

I do not think that Edmunds chose the most picturesque positions possible. Waterloo Bridge, from below, and The Embankment, from the second or third embrasure of Blackfriars Bridge, are charming subjects. The latter, especially when there are a few lighters moored above the bridge to break the middle distance with their lanterns, is one of those pictures that you can only find in one place in the world.

Joseph Pennell has studied this phase of London with charming results, and we owe him thanks for discovering and bringing home to us the beauty of Charing Cross Station by night. His powerful



THE THAMES EMBANKMENT, FROM THE SAVOY HOTEL.
By Catherine Weed Ward.

etching (was it not in *The Studio*?) is one of the things worth keeping and studying. But even of this same scene I think there is a better and more picturesque view to be made, from the Waterloo Bridge.

Not only the river, but also many of the street scenes of London by night are truly picturesque, and with carefully backed or multiple-coated plates the technical difficulties are very slight.

Before entirely leaving the subject of the river, I must refer to the wonderful pictures that are often to be seen on a steamer trip to Greenwich. And I must say just a word as to the pictorial value of St. Paul's, which is the "making" of many a picture of river life.

The country photographer often leaves his camera at home when visiting London, because he "does not care for architectural work, and

its lime trees. The walk was simply a revelation, and so it would be to thousands of Londoners who think they know London pretty well. It would provide plenty of camera-work for many days in the merry spring-time.

The parks are full of good opportunities, changing almost daily, for those who have the seeing eye, even Piccadilly, with its houses on one side and the Green Park on the other, is well worth attention. St. James' Park, centred round its pond, has some fine groupings of trees with water-foreground, and each of the other parks has its own features. The Regent's Canal, grimly picturesque about its entrance at the Limehouse Basin, and at its locks and bridges, and tunnels in the city, has some charming landscapes along its banks as it passes along the edge of Regent's Park. It even gives park and forest scenery such



THAMES EMBANKMENT AND SOMERSET HOUSE.

By Halton East.

hates snap-shooting in the streets." How few realise that for pure landscape work there are not many seven-mile radii to compare with that round the G.P.O. Of course, seven miles includes Hampstead Heath, a portion of Epping Forest, and the commons of Barnes, Putney, Wandsworth and Clapham. I shall speak of some of these truly beautiful places anon; but even if all these spots were "barred" I would still claim London as a great place for landscape work. A few years ago I met a country cousin at St. Pancras Station one morning in early May. He had talked of the miles, and miles, and miles of streets and houses, so I determined to show him trees. We took our way past St. Pancras Church, through some of the well-wooded squares of the W.C. district, through Gray's Inn Gardens, where the rooks still nest, through Lincoln's Inn Fields, New-square, and the Temple Gardens to the Embankment with its grand curve and the tender green of

as many an ancient country estate would be proud to equal. I will particularise but one example. Turn from Albert-road into the footway that crosses the canal somewhat east of Avenue-road. Look westward, across the close-cropped sward under the level branches and between the boles of the fine old trees. How beautifully the sunshine plays in patches through the shade, how well the sheep compose to make a picture. It is but one, out of very, very many.

I spoke of Epping, a magnificent property, neglected, practically deserted by those who should fairly revel in its wealth of beauty. Close to London, free to all, owned by us, the people, it presents fine woodland glades, magnificent tree studies, infinite variety of foregrounds and detail pieces, and even wide rolling landscape. The neighboring Wanstead Flats is dear to lovers of the Salonesque, and here the camera-sportsman may study the lordly heron and many another



A "TURNER" SKY.

The Thames at Lambeth.—By Geo. Brown.



THE "BLUE-COAT" SCHOOL.

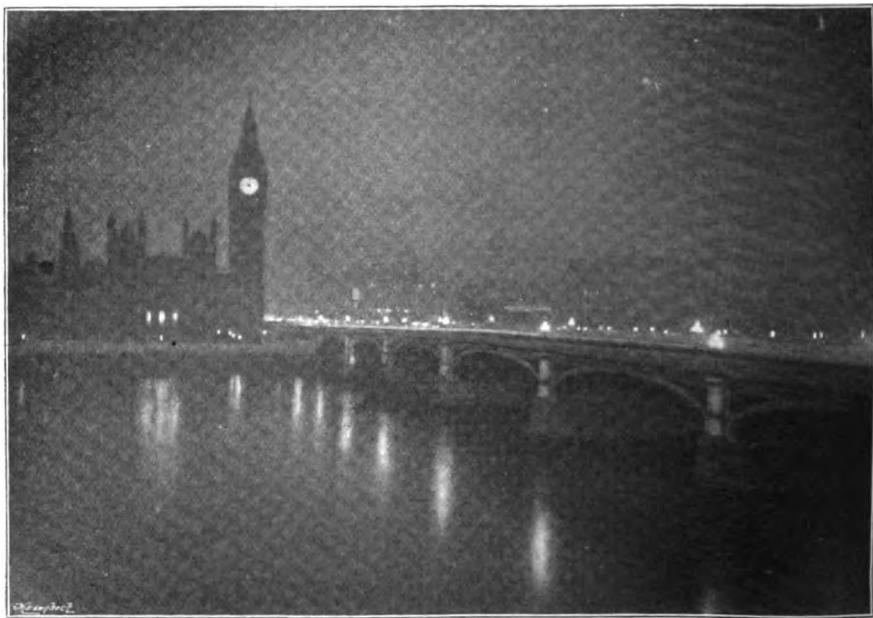
By John Beeby, New York. From 1st-Prize Set in our "Beauty Spots" Competition.

feathered subject for which many of us think it necessary to roam far away from cities. The Heath, "'Appy 'Ampstead," is usually left to 'Arry and his 'Arriet; but Karl Greger and Burchett have both shown what fine landscape work is there possible.* The commons in the S.W. district have never been represented as they might be. They have as much character, and will as well repay study as many of the Broads, or 'the Essex mud-flats which have latterly had such popularity.

You see that I have said little about the show-places, and yet have pointed out a great deal of good work yet to be done. In the city itself there is a great deal. Probably thousands of fairly educated Londoners even, are unaware

street, and displaying wares of every kind, with occasional tilt coverings, with yelling, gesticulating salesmen (and women), and a thrusting good-humored crowd, is a sight not to be equalled anywhere. The Saturday afternoon and Sunday morning markets are the busiest, and many a tradesman along the lane-side would lend his upper window if properly approached.

Of historic London I need say nothing, save that it is fast disappearing, for the subject is far too vast for these pages. Literary London, too, is disappearing rapidly—which seems all the more reason to urge a thorough photographic recording while yet it is possible. Even within the last few months a great quantity of good material has been swept away—for instance, Fulwood's Rents,



WESTMINSTER BY NIGHT.

By Walter Edmunds. From "Photograms of '95."

that the last of the city gates is still standing, and though somewhat blocked by its surroundings, is capable of picturesque treatment. It is St. John's Gate, just off Clerkenwell-road. Comparatively few are aware of the quaint, narrow, winding streets and alleys between Long-lane, Little Britain, and Aldersgate-street. Yet some of the old houses hereabout must date from the time when martyrs were burned at Smithfield hard by in the reigns of Bloody Mary and (about equally bloody) Queen Bess. The old Cloth Fair is typical of this district.

The open-air markets of London, one of the most picturesque of which is in Leather-lane, Holborn, are quite unique. The double row of market barrows blocking practically the whole

the sweaters' den described in Alton Locke, is now being demolished for the Central Electric Railway. Though one side of the Rents continued its ancient character to the last, it is doubtful whether any negatives of the place exist. If they do, it would be difficult indeed to find them, should they be needed for any purpose.

The Dickens haunts, too, are rapidly vanishing or changing, and probably they have been neglected mainly because few realised that they were actual places, and that the real names were often used. Kingsgate-street still turns off Holborn, and might possibly be a home of Poll Sweedlepipes, although Sairey Gamp and her crony could scarce be imagined now. Bleeding Heart Yard, with the new and business-like warehouse of G. L. Gent and Abbot, is but little like the place described as occupied by Doyce and

* See supplement to *The Photogram*, August, 1894, Hampstead Heath, by Karl Greger.—Eps.



EPPING FOREST.—By J. W. Carpenter.



ST. JAMES' PARK.—By Freeman Dovaston.

Clennam, and we can call up no image of the shop of Mrs. Plornish; but Little Saffron Hill and Great Saffron Hill, redolent with memories of *Oliver Twist* and Fagin, still retain something of their character. Tom All-alone's has just been converted into a little recreation ground.

But if these minor places are changing, the Temple, and the Inns of Court, around which so much of Dickens' and Thackeray's work has centred, still remain in all their quaint picturesqueness.

The old churches of London, too, are mines of antiquarian and pictorial wealth, yet the only ones to which any attention is usually paid are



THE CHAPEL, STAPLES' INN.

By Freeman Dovaston.

St. Paul's and Westminster, in many respects the least satisfactory from the pictorial point of view. The Temple Church, one of the very few circular churches built in this country, as the centre from which the old crusading Knights Templars set forth against the Saracen, is full of interest. The church itself is picturesque, both inside and out; and the tombs of the Crusaders, with the extent of their expeditions indicated by the crossing of their legs, have a unique interest. Need I mention in any detail St. Bartholomew's Church, hard by Smithfield; St. Sepulchre's, from which has tolled the knells of hundreds of condemned Newgate prisoners, or the old church of Bow, whose bells called Dick Whittington back from Highgate Hill, and which is overlooked by thousands because it stands in the middle of

Cheapside? There are a hundred London churches, all full of interest and charm, but I will only mention two others, which have been prominently before the public in the week in which I am writing. One of these is St. Mary, Aldermanbury, just behind the Guildhall, where lie the remains of John Heminge and Henry Condell, Shakespeare's fellow-players and the publishers of his works, to whose memory a tardy monument has just been erected. The other is St. Saviour's, Southwark, at the southern end of London Bridge, where a window to "Phillip Massinger, a stranger" has just been unveiled. This church, formerly St. Mary Overies, is where Edmund Shakespeare, "a player," the brother of William Shakespeare, was buried on December 31st, 1607, with the unusual honor, for a player, of "forenoone knell of the great bell." With this same church are connected memories of Alleyn, Beaumont and Fletcher, Dr. Johnson, John Bunyan, Cruden (of the Concordance) and Geoffrey Chaucer.

I close these fragmentary notes with a feeling that I have hardly touched the fringe of the subject, and in closing them would urge upon photographers the duty of studying and of bringing home to our people, the wonderful beauty and grandeur, the historical and the living human interest of this great legacy from our fathers. Sir Walter Besant has done much to awaken a true appreciation of London's history and romance, Herbert Railton and others have pictured some of the notable buildings, but it remains for photography and photo-mechanical reproduction to shew the people how beautiful our London really is.

The best and most convenient map of London is Walkers', "The Pocket Atlas and Guide." Price 1s.

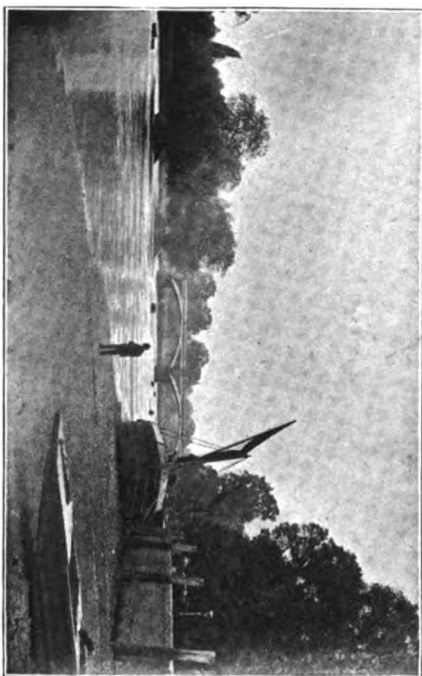
Of guide-books and other books there are so many that it is difficult to recommend any one. A valuable book for the student, and one that is charming to the ordinary reader, is "London," by Sir Walter Besant. Price 7s. 6d.

Another capital guide is "Walks in London," by A. J. C. Hare. Price, in two vols., 6s. each.

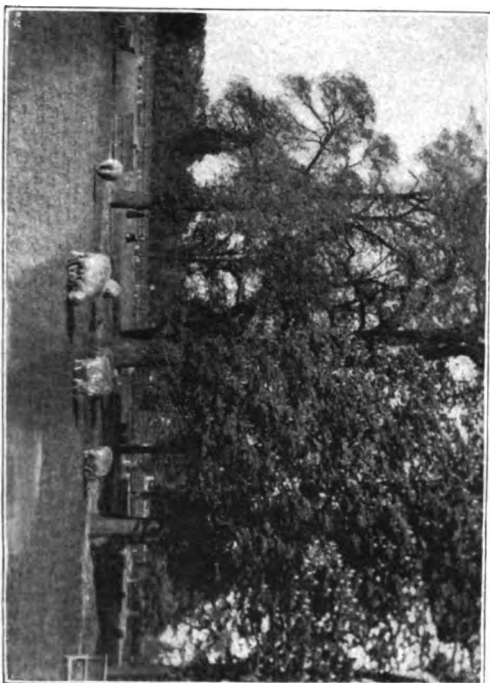
Amongst the London views that we have published, beside those mentioned by the writer of the article, are:—In *Photograms of '95*—"Sunset on the Thames," by Edwin Dockree, page 34; "Brompton Road, late Afternoon," by Eustace Calland, page 65 (also as a supplement to *The Photogram*, February, 1896).

In *The Photogram*—"Evening before the Day of Rest," by Karl Greger, Nov., 1894, page 264; "Sunset, Blackfriars," by John Henry Anderson, Nov., 1894, page 275; "In the Zoo," by R. B. Lodge, Nov., 1894, page 281.

PERMISSION is required to photograph in the Parks and many other places in London, but is easily obtained on application. A complete list of the authorities, with the terms and conditions, is given in the series of articles entitled "Permits to photograph," by Charles W. Gamble, which appeared in *The Photogram*, 1894, pages 38, 68, 161, 189, 219.



UP THE RIVER.
By Catharine Weed Ward.



IN DULWICH PARK.
By S. W. Gardner.



OSALIC WORK IN ST. PAUL'S DOME.
By Freeman Douglass.



A DICKENS RELIC.
By Geo. Brown.

LONDON TOWN.

Some London Churches, And a Moral.



ONE OF LONDON'S MYRIAD SPIRES.
By G. Gilbert.

St. Paul's, of course, is well-known to our readers and has been very extensively photographed, but the view we reproduce (page 206) is new, and shews the eye of an artist in its selection.

The fine old church of St. Bartholomew offers even better opportunities than the greater St. Paul's, and here Mr. Dovaston has done some of his best work.

Christ's Hospital (better known as the blue-coat school) and Christ Church, though standing in the city in open view of Newgate-street and Little Britain, are known to but few photographers, and yet they present a great variety of good subjects. In some of the exteriors Mr. Dovaston has made excellent use of his material and not only gives us good composition, but also an atmosphere, and a sense of air and sunshine that are rarely seen in photography. In this respect some of his work resembles that "Brompton Road," by Eustace Calland, which called forth so much enthusiasm at the Salon last year.

Technically, Mr. Dovaston's work is notable for its "richness" of effect—strength combined with harmony. Strong high lights contrast with strong shadows, but through all there runs sufficient delicate detail to relieve it from harshness. The key to his success in interior work seems to be his bold use of heavy, but yet transparent shadows. Unlike many workers who give a long enough exposure to cause a dark crypt to appear as a flat, brightly-lighted room, Mr. Dovaston shows his crypts in shadow, a plan we much commend.

It would be well if everywhere, throughout the country, a photographer could be found to make a careful detail study of the old churches, guild-halls, castles, and manor houses of his own locality, and to offer prints to the local Free Library or Scientific and Literary Association.

ON two or three previous occasions we have directed attention to the work of Freeman Dovaston, but the issue of his third little book of London studies suggests a few further comments and the reproduction of a few specimens of the work.

Mr. Dovaston is a good example of that specialism and application of photography to definite purposes which we have long preached. An organist by profession and an artist in temperament, Mr. Dovaston approaches photography as an enthusiastic amateur, and uses it as a means of artistic expression, as well as a mere recorder. His three little books, are published by himself, at 5 George-street, Euston-road, London. Their titles and prices are: "St. Paul's Album," price 6d., post free 10d.; "Views of St. Bartholomew the Great," 1s., post free 1s. 1d.; and "Views of Christ's Hospital," price 1s., post free 1s. 1d.; and the series is worth having as a suggestion of what any photographer who loves good work rather than profit, can do for his own church, or town hall, or free library, or other building in which he takes sufficient interest. The enthusiasm with which Mr. Dovaston takes up his subject is not limited to the amount of work required for a book of views, but of each of the churches he has made an earnest and careful study, resulting in an extensive series of negatives. A unique set, for which he deserves the thanks of all artists, is one giving all the details of the mosaic work recently placed in the roof of St. Paul's. Not only enthusiasm, but also strong nerves, a steady head, and plenty of technical ability are required to obtain satisfactory results in that dark roof, working upon the dizzy scaffolding of the mosaic artists.



CLOTH FAIR AND ST. BARTHOLOMEW'S.
By Freeman Dovaston

Facts about Lenses.

*Being a Chapter from "Early Work in Photography."**

No part of his outfit puzzles the average photographer so much as the lens, and ignorance of some of its simplest properties exists even amongst advanced workers. This seems to be because the elementary principles have not been carefully explained, and because the meaning of a few technical terms has not been learned.

There is a great deal of "superstition" about the lens, and many fallacies are believed about it; but its operations are based on the unchangeable laws of the universe, and the first of these is that "like causes, acting under like conditions, produce like effects." If photographers would always realise this, they would meet fewer difficulties.

To understand the principles of the lens it is well to do a little experimenting with a pin-hole; for the fundamental laws are the same in both cases.

Take your camera, screw out the lens and put in its place a piece of tin or fine cardboard through which you have made a hole with a fine bradawl or a darning needle. Go into a fairly dark room and place a lighted candle with the centre of its flame three inches from the hole (which we will now call a pin-hole). Adjust your camera so that the ground-glass screen is three inches from the pin-hole, and you will be able to see on the screen an image of the candle-flame exactly the same size as the original flame, but inverted. Why is it inverted? Because light proceeds in a straight

an image exactly one inch square. Why is it exactly one inch square? Because light travels in straight lines, thus:

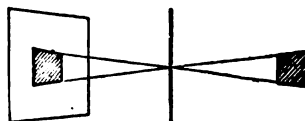


FIG. 3.

and not in bent lines thus:

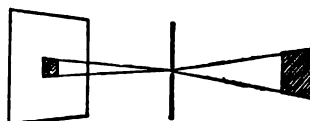


FIG. 4.

or thus:

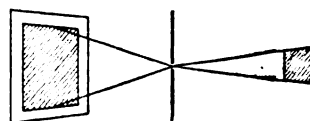


FIG. 5.

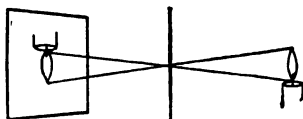


FIG. 1.

line (fig. 1); and cannot work round corners (fig. 2).

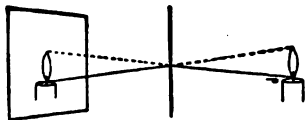


FIG. 2.

If this is not clear at once, think it over until it becomes so. Then remember it is a *law*, applying to church steeples and maiden aunts as well as to candle-flames, and that this is the reason why the lens image is inverted—no witchcraft about the lens.

Let us now put our candle in a lantern or behind a piece of tin or cardboard having an opening an inch square, covered with a piece of ground-glass or waxed paper. When this illuminated square is placed opposite the pin-hole and three inches distant, it will throw upon the ground-glass screen, if that is also three inches distant,

If we now move the ground-glass screen to six inches distance we shall find that it bears an image occupying four square inches, or two inches by two. The reason seems obvious, for we double both the length and the breadth of the image. We shall observe, moreover, that the image in this case is much less bright than it was in the previous case (fig. 3).

In fact, it is exactly one-fourth the brilliancy, and for a very simple reason. We have done nothing to increase the amount of light passing through the pin-hole; but we have made it cover

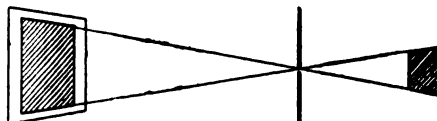


FIG. 6.

four times as much space. This applies with lenses also, and is the basis of one of the most valuable but least understood of all the laws relating to lens work.

Let us return to our naked candle-flame; still leaving it three inches, and the ground-glass six inches from the pin-hole, and we shall see that the image of the candle-flame is just twice as long and twice as broad as when the ground-glass

* "Early Work in Photography." A Hand-book for Beginners. Price 1s. London: Dawbarn & Ward, Ltd.

was three inches distant. It is also just one-fourth the brilliancy of the former image.

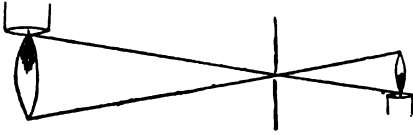


FIG. 7.

Let us now move the candle-flame to a distance above the pin-hole; still keeping it three inches from the front of the camera. The image will fall towards the edge of the ground-glass, instead of in the centre, and we shall notice that the image

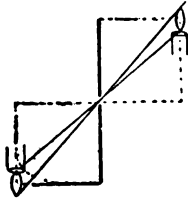


FIG. 8.

looks longer and narrower on the ground-glass than it would appear if viewed by the eye placed at the position which the ground-glass occupies. The reason for this is the angle at which the image falls upon the ground-glass surface, and in order to obtain an image more truly approximating what the eye would see, we might have the ground-glass curved, as shown by the dotted lines. But better still if we can remove the candle to six inches, and the ground-glass to six inches from the pin-hole. This will give us the image in the same relative position on the ground-glass, and of (approximately) the same size, but in better proportion.

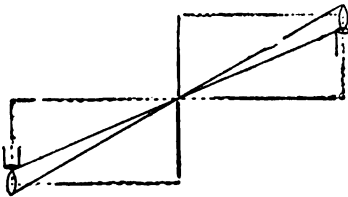


FIG. 9.

Suppose now, in place of the very small pin-hole in a very thin card, we take a hole one-eighth of an inch in diameter in a card one-eighth of an inch thick. The rays from a candle placed at A will pass through easily. If we remove the candle to B, only a small pencil of rays will pass through, while by moving the candle to C we prevent any rays from passing through, because no straight line from C can pass through the hole.

If we now make the pin-hole considerably larger, say, a quarter inch diameter, we shall find the image on the ground-glass much more brilliant, but much worse defined. This is simply because light rays from the candle proceed in all directions, and while the rays proceeding through the centre

of the pin-hole are making a definite image, those passing through the upper part of the hole are

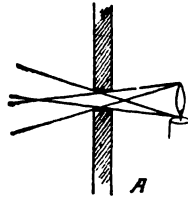


FIG. 10.

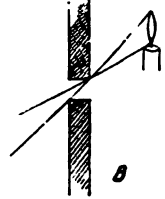


FIG. 11.

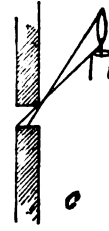


FIG. 12.

making another, while those passing through the bottom and the sides of the hole are all making their own images, and the result is confusion.

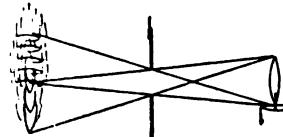


FIG. 13.

As the hole is further enlarged, the image constantly becomes brighter, and constantly more indistinct until it is simply a circular patch of light, with no resemblance to the shape of the candle-flame. This would, perhaps, be more easily and clearly understood if, instead of the one large hole, four or five pin-holes are made at about a quarter inch distance from a common centre. The blurring of the image will be seen easily; and the large hole acts as an infinite number of smaller ones.

If we return to our original small pin-hole and take the camera out of doors, we shall find that an image of any fairly lighted natural object toward which the pin-hole is directed will fall (in an inverted position) upon the ground-glass. If we cover our heads and the back of the camera with the focussing cloth we shall see that the image, though faintly illuminated, is clear and sharp, and if we expose a sensitive plate to this image, an impression is made which can be developed into a negative. But the amount of light passing through the pin-hole is so small that it must act for a long time (*i.e.*, we must give a long "exposure") in order to make a strong impression. But in photography we must face the fact that we wish to make our exposures as

short as possible, especially when the objects to be photographed are in motion (say, express trains or unruly children). This brings us to the problem which led to the use of lenses in photography—the desire to use a big hole, in order to pass plenty

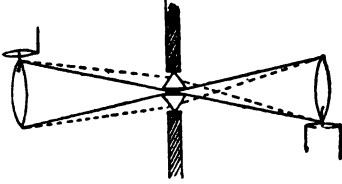


FIG. 14.

of light, combined with the necessity of keeping the image "sharp" and well defined.

The lack of sharpness when the rays passed through the large hole, was seen to be due to the want of coincidence between the images formed by the rays passing through the sides, and those through the centre of the hole. We need, therefore, some means of causing the images formed by the outer rays to fall on the same spot as those formed by the rays passing through the centre. In other words, we want a means to bend slightly inward the outer set of images. The bending of the rays of light is usually accomplished by reflection or refraction, and in camera work the latter is found

more convenient. When light passes from a medium of given density into one of different density, its rays are bent or refracted, and a simple example of this is found in the use of a prism. Suppose, therefore, we make our pin-hole much larger than before, allow the centre to be open for the central rays to pass and fill the upper and lower

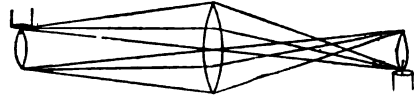


FIG. 15.

part with prisms, what will happen? (Fig. 14.)

The central rays of light will pass through the centre, as before, while those through the top will be bent (or refracted) downward, and those through the bottom will be bent upward, so that the three images coincide on the ground-glass. We shall need another prism at the right-hand side, and one at the left-hand side of the hole, to refract the rays from those directions, and then, as four straight lines will not fill a circle, we shall need other prisms in corners between those already placed. In fact, we need an infinite number of prisms, arranged round a common centre, and this is a simply a lens in a primary form (fig. 15).

(To be continued.)

Photographing and Coloring Still-life Subjects *Printed in Platinotype.**

BY HARRY D. GOWER.

A GOOD number of photographic processes have from time to time received attention from those who have a desire for coloring their work. Platinotype pictures left as they are, are very beautiful, and it almost seems a pity to mention coloring them at all, but there are many subjects that are so greatly improved by color, things that even in platinotype do not always come up to one's expectations as monochromes. This, coupled with the permanency of the process, places it at once a useful and delightful material in one's hands to work with.

Many a pleasant hour may be expended on coloring that class of subject called still-life. Simplicity, devoid of bewildering detail, charming subjects can be grouped up, which afterwards, carefully tinted from the objects themselves, make excellent pictures. Not all subjects, in my own estimation, are adapted for color work upon platinotype paper; I leave landscapes severely alone, and take simply the photographing and coloring of the everyday objects one meets with about the house.

China ornaments, nick-nacks, flowers, and pots and pans of the kitchen, that are capable of rendering good photographic contrasts, are admirable objects; and I feel sure anyone who feels

disposed to take in hand this sort of work will be charmed with the results. Before isochromatic plates made their appearance, it was often rather difficult to render some subjects to a proper degree of tone, and the results when coloring had to be skilfully worked up in body colors. I have gone so far as to alter the tint of the object photographed to get the necessary contrast in the resulting picture; but this disadvantage has now practically disappeared.

The most difficult part I found to contend with was the careful arrangement of the objects, for though it was easy enough to properly group the subjects I did not always get the desired results in the negative and subsequent print. This was mainly caused by counter reflections which existed in the different objects photographed, and can be practically demonstrated by using two candles, and causing them to cast two shadows of a cylinder or similar object resting upon a sheet of white paper upon the table, when the two shadows will be a reddish and greenish nature. Though these reflections may appear of a trivial nature it was enough to upset some subjects, but with isochromatic plates they disappeared to a great extent.

In photographing the group, any window with

* The article to which a prize of £5 5s. was awarded in our recent competition.

a north-east aspect will do, and so will a south or west, providing you keep the sun out. If you can stretch a piece of brown paper across the lower half of the sash and use the light which comes in from above, so much the better.

The stand or table, about which I may say a few words, and upon which the subjects should be arranged, may consist of an old tripod, upon the top of which is screwed a board 2ft. x 2ft. This will be found quite large enough for all purposes. A piece of wood the above size, with three broom handles for legs, can be rigged up, and will be found to answer the purpose equally well. The top of this table can be covered with a piece of green baize, which makes a very good ground, and, if necessary, any other material may be carelessly thrown over it to add variety to the subject.

carefully as possible upon our table, and walk back a few feet to look at them. They may not compose quite happily; however, after one or two attempts we may come to the conclusion that they are fairly well placed. If the light happens to illuminate the subject on our right we may find the shadows on the left a trifle too dark. To obviate this, a sheet of white paper may be brought into use and hung from a string placed across the room at right angles, which will at once be found to vastly improve things.

To get a good idea as to what your finished picture should be like, a cigar-box lid with a square centre cut out, say a quarter the size of the plate you are working, blackened with mat varnish, helps in many respects if used as a view finder. This cuts off the surrounding light, and the eyes are then concentrated upon the subject, and if a piece



STILL-LIFE OBJECTS.

By Harry D. Gower.

The background is another matter of importance. I have used with good all-round results brown paper of different tints, and in most subjects it is hard to beat, but various modifications are easily made by procuring an old wall-paper design book. This usually secures an enormous range of backgrounds, both good and bad, photographically; but those of light and delicate designs are the best, and should be free from hard contrasts. If the window is near the wall so much the better, as the wall can be brought into requisition to hold the background, and is useful sometimes to hang some article against that might be included in the picture.

Having this apparatus ready, for sake of experiment, a hunt round the house will give us some simple material. A blue pattern kitchen plate, an old flat strawberry punnet, some new laid eggs and a Florence oil flask, and, perhaps, a few flowers will answer well. These we arrange as

of string is put through a hole bored at one side, and a knot tied at each end and then held against the eye, we have a piece of apparatus that is valuable. It can be gauged with the lens used and focal distance, and when this has been found a knot can be tied at this distance and will be of great use in determining how much to take and how much to leave out without referring to the camera each time.

The height of the camera above the table, should be carefully considered, as extraordinary results are sometimes produced, and on no account should the camera have too much tendency to point down upon the group. It should be a little higher than the table, and very little tilting should be resorted to. The focussing should be fairly sharp, and stop down till you have all the objects well in focus, as any softness that may be considered necessary may be done in the printing.

The exposure should not be too long, but over-

done work may be subsequently hid when coloring better than under done. The developer may be your favorite one.

With reference to printing the picture I have little to say. A good grey print is the color that I recommend, not a black and white with hard contrasts, as it is almost impossible to do it justice with color afterwards.

The print, when finished, is to be mounted with starch paste upon a piece of stiff cardboard, and when dry, give it a preliminary coating of thin size; this not only keeps the colors from sinking in, but helps to make the colors more brilliant and not look dead. When so far has been carried out, preparation for coloring may be taken in hand.

The coloring should be done before anything has been disarranged, as by this method the local colors can be matched to a nicety.

The paints may be moist water colors in pans, or tubes for choice. Use only permanent colors, as by this means you are creating everlasting work. Two or three medium size sable brushes and a clean china palette are all the materials necessary.

In coloring the picture we are not bothered

much with the shadows, as they are practically already made, but still it may sometimes be found necessary to emphasise them. In getting the correct tint of an object it is well to mix your tint to correspond with the lightest part of the object. Coat a piece of paper and place the test in close proximity, and walk a few feet away and gauge it. If not quite right, a second or third attempt may be resorted to. The whole of the coloring should be done in this way.

Flower subjects offer an exhaustive field for work, but I should recommend that more solid articles be first practised upon, after which more delicate work may be undertaken. Flowers run into a serious amount of detail, and lead to niggling work, and in small pictures so much detail is lost.

In the event of large pictures being worked, better results are obtained by taking the subject small and then making an enlarged negative. By this method focal union (if I may call it so) exists all over the picture. In conclusion, I may say that those who contemplate trying their hands at taking and coloring platinotype still-life subjects will not be disappointed with the results.

System in Exposure.

BY FRED W. COOPER.

HAVE you ever exposed a plate twice? Isn't it annoying? Especially when both subjects are good ones and far away from home. The way to avoid such mishaps is to have a system when out picture-hunting, and a good one is as follows:—Procure an old 5×4 film carrier or get a piece of tin about 4½×5½ inches and turn three of the edges over to hold a card like the holder fixed near the door of a tram-car or 'bus for the guard's list of passengers. Next cut a number of cards or thick papers to fit the holder and rule as under:—

EXPOSED AT	ON	189
DESCRIPTION OF PLATE		NUMBER
Extra rapid	30	1 2
"	"	3
Landscape	40	4
"	"	5 6
Ordinary	30	7 8
Anti-halation	50	9
Isochrome	40	10 11
"	"	12 13
NOTES		

A small piece of the holder should be cut out at the edge not turned up (as shown by dotted line in sketch) so that the cards can be easily taken out. Small holes should be pierced in each corner

of the holder, so that it can be sewn on the inside of camera case cover where it will always be handy. If a loop is added at the top, by bending a small piece of leather round a pencil and stitching same to camera case, just above the holder, a pencil can always be at hand.

It will be seen from the illustration that different kinds of plates can be carried and exposed in any order—suppose, for instance, you wish to photograph an interior, if you have an anti-halation plate you will use that. You look over your list and find that slide No. 9 contains what you want—take this slide and when you return it to the bag draw your pencil through No. 9, and so on for every plate exposed. You can tell at a glance how many plates exposed and what kind of plates you have brought with you. Always keep a register of all the exposures you make in a small book which you can purchase at any photographic dealers for 6d. Such a record is useful for reference and is a great help when developing plates, especially if they are not developed for a long time after exposure. The note-book should be quite separate from the list attached to camera case—as all unexposed plates can be noted on a fresh list and left in the slides for future use. Keep the old list until you have developed the plates—it may be useful to prevent confusion even when in the dark room.

This is a simple dodge and it works well, but mind—don't forget to draw your pencil through the number of slide after each exposure. Such a list, with small alteration, is applicable to single or double slides if they are numbered, as all slides should be, in plain figures. The list sketched is for double slides.

Duplicated Sitters.

A DISTINCTLY artistic improvement on the old and usually hideous, though sometimes humorous, "doubles" has been designed by Mr. Moreno, one of the most able portrait photographers of New York. An example of this work, which was contributed to *The American Amateur Photographer*, we are enabled to reproduce by the courtesy of the proprietors of that journal. The illustration will be found on the opposite page. The work is described as follows in the *A.A.P.*:—

"If we number the figures from 1 to 7, beginning at the left, it will be seen that 1 is repeated in 5, 2 in 4 and might also have been in 6; and 3 is repeated in 7, thus by three exposures making seven figures on one negative without the possibility of detecting the junction lines, and by the simplest possible method.

"With the picture Mr. Moreno kindly sent the appliance employed in its production, which is simply a sheet of cardboard $9\frac{1}{2}$ inches square, presumably about the size of the plateholder, or the framework of the camera against which it rests, and to one or other of which it had been fixed by tacks. In preparing the cardboard for this particular arrangement a rectangular square had been drawn in pencil $8\frac{1}{2} \times 5$ inches, the upper and two side lines cut completely through with a sharp knife, and the lower line only half through, making a flap that could be folded down, away from the plate and resting on the bottom of the camera. This flap was then divided into three

by two right through cuts, and that is all.

"On referring to the picture and keeping the flaps in mind, it will be evident that 1, 2, and half of 3 were exposed through the first flap, the second and third being up; that the other half of 3, 4, and half of 5, through the second flap with the first and third up, and the other half of 5, 6, and 7 through the third flap, the first and second being up.

"It will be evident that this arrangement is most suitable for the 'reversing back' style of camera, but, given the idea, anyone with a little ingenuity will have no difficulty in adapting it to almost any form. Mr. Moreno tells us that the only difficulty, or rather the only point requiring care, is getting the proper distance between the plate and the mask, or flaps. Roughly, it is from half an inch to an inch, the exact distance being simply a matter of experiment, and when once ascertained is easily retained. That he has found it, is abundantly shown by the fact that although 3 and 5 are each the result of two exposures, there are no traces of the lines of demarcation."—*The American Amateur Photographer*.

The advantages of this method to a photographer who is attempting genre work, and who finds a difficulty in obtaining a number of suitable sitters, are very obvious. As our post-bag has lately brought us several enquiries from our readers with regard to the making of photographic doubles, we propose to give in our next issue simple instructions for this work.

What we Photograph and What we See.

By A. H. WALL.

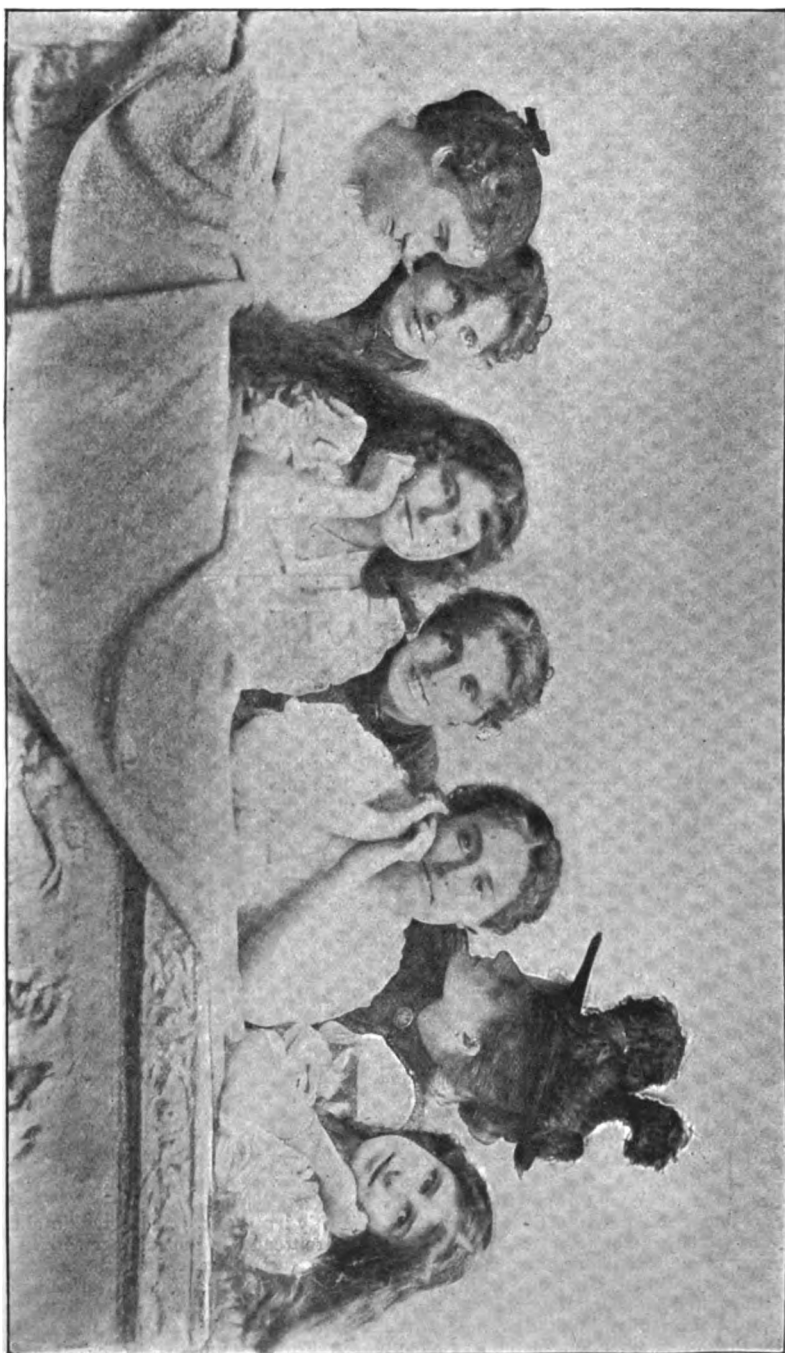
I FANCY we should gain some clearer ideas than most of us appear to possess if we considered not the human eye from the camera view-point, but the camera from the view-point of the human eye. Let the opticians say what they will as to their similarity of formation and action in receiving and transmitting the images which light conveys; it remains a fact that the human eye and the optician's camera are, in nearly every way, altogether different things, that the images we see, and the images the camera receives from the lens are *not* by any means closely allied.

Here is one fact in confirmation. You are, let us say, six feet high and broad in proportion. I know this directly I look at you. Why? Your image on the retina of my eye is not life-size. How can this be explained? I never mistake a mole-hill for a mountain, or an elephant for a mouse. When I look at my ordinary photographic miniature portrait I do not at once see the life-size of the original. The original may be short or tall, four feet nothing, or six feet ten for ought I, in the absence of any outside standard of comparison, can positively assert. In a somewhat more complicated way this is true when applied to the eye and camera images of a great variety of objects.

Here is another illustration. Our feelings influence our thoughts, our thoughts our vision. Looking inward with closed eyes I still see the imagination's images, clear and distinct; but actual images conveyed from without by light, are no longer visible. The camera has no power akin to this. To explain it, we say the mind *perceives*, the eye *sees*. But the camera never perceives. It only sees.

I once suggested that all photograms should be enlarged from the smallest possible negatives to comparatively large sizes. And the late Mr. Sutton, of Jersey, at that time teaching photography to the students of King's College, was strongly of my opinion. He said the prints would approximate more nearly to what the eye actually saw. There we agreed, but I still urged that as there was no seeing without perceiving through the human visual faculties, so in no merely mechanical way would it be possible for the camera to represent nature exactly as we see nature.

What we really want, I think, is a recognition of the fact that the mind plays its part with the eye, in producing what we see, and that the camera which produces merely what the eye and the camera sees, without what the mind perceives, gives us something wanting in animation and without any kind of intellectual influences.



DUPLICATED SITTERS.

By Morzsa, New York. (from The American Amateur Photographer).

But on the other hand it is undoubtedly true that many of us seldom do perceive, and some never will perceive. They are mere cameras. Ask such a person to describe something he saw—its shape, size, colors, and other characteristics—and he will at once seem confused and puzzled, or begin guessing, more or less wildly. Get half-a-dozen such persons together and ask them separately to describe something each has often seen, and you will probably have half-a-dozen descriptions, no two of which will be alike and not one of which will be true.

Perception is really a very elaborate process, involving comparison, association and deduction. Perceiving is, consequently, a much slower process than mere seeing. As we all know, you can obtain the so-called instantaneous photogram in much less time than the visual image requires to awaken mental consciousness. In some the sight is quick in its operation, in others slow, without any perceptible difference in the mechanical construction or condition of the eyes.

Another illustration of how the human eye and the camera differ is seen in the fact that the camera will give within the size of a space of about half-an-inch the entire sheet of a newspaper, but the eye requires some strong magnifying power before it can be read. Yet an image no

larger, or smaller, thrown upon the retina of the eye will be read easily. Yet again, images visible on the retina are inverted as they are in the camera. Here again the perceptive power exercises unconsciously its corrective influence. Yet when we look at the image thrown by the photographic lens we see it inverted.

Then again, we have two eyes which give two images, although we *perceive* but one.

But what do we glean from considering these well-known things? Is it not that *perceiving* being something of higher importance than mere *seeing*, we should perceive while our cameras see. Or, in other words, give to our resulting photograms those elements of art which are of intellectual rather than those which are of a purely optical or mechanical origin. Perception may be developed and cultivated, and should be, as every artist knows, because until he can see and perceive truly he has no chance of representing truly. Why should not the photographer who would raise his beautiful art to a loftier standard of perfection and beauty pursue the same end in his own way?

We are all so apt, now-a-days, to look at everything from a materialistic point of view, and that is never truly philosophical or sympathetically artistic.

A Simple Bayonet Clutch for Lenses.

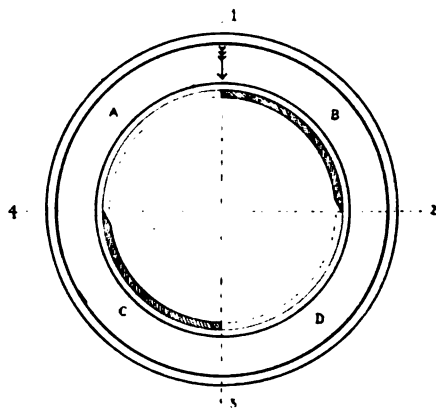
By E. SANGER SHEPHERD, F.R.P.S.

PROBABLY every photographer has at some time or another experienced a difficulty in screwing a lens into its mount, the comparatively large diameter of the screw and the fineness of the thread in most of the mounts in common use, rendering it very easy to start the screw crosswise and strip the thread.

The accompanying diagram (fig. 1) will enable anyone who can use a file, to so alter the thread of the screw that a lens can be changed instantly without any difficulty or uncertainty as to where the threads start, a quarter turn being sufficient to firmly secure or release the lens from its flange. All that is necessary is to file away two quarter sections of the thread of the flange, and the opposing section of the thread of the lens mount.

To make the alteration proceed as follows. Unscrew the lens and on the flange rule with a soft lead pencil two lines at right angles, as shown by the dotted lines in the figure, dividing the flange into four equal parts. Letter the section as shown A, B, C, D, and the dotted lines 1, 2, 3, 4, at 1 engrave an arrow as shown. Screw the lens home into the flange, and mark on the lens mount where the letters and dividing lines come, being careful to letter and number each section and line. Unscrew, and, with a fine-cut half-round file, cut away from the thread of the flange the sections marked A and D, as shown by the dotted line. From the lens mount cut away the sections of the thread marked A and D, a fine-cut flat file with a safe edge being the best tool to use. On the mount engrave an

arrow at line 2. If the two arrows are now placed opposite each other, the lens will drop into the flange, a quarter turn to the right making all secure.



My lenses, both photographic and microscopic, were treated in this manner some years ago, and I am sure the saving of time and temper has well repaid the few minutes work required to make the alteration. I do not wish to claim the idea as original, as I saw it in use for fire plug caps in Rio de Janeiro in 1888, but as I have never seen it described in any of the photographic papers, it will doubtless be new to many of the readers of *The Photogram*.

Xmas Cards.

SEPTEMBER is the transition month, from summer to winter, and next month our articles and notes will begin to treat more fully of the photographer's indoor occupations, while "Beauty Spots" and out-door examples will be laid aside until the return of March or April.

The Xmas time is coming, and one important subject for photographers is now the preparation of Xmas cards. We need not go

ambitious, and is a very fine example of well planned and skilfully executed combination work. Another card by the same able photographer will be found in our annual, *Photograms of '96*.

As an encouragement to the pursuit of pure decorative photography, we remind our readers of the offer made months ago (in February), of

A Prize of Three Guineas

for the best set of three photograms suitable for



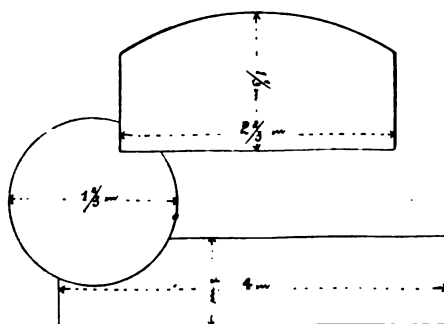
GOOD WISHES TO BRITISH WORKERS. (Jan. 1896.)

By Ch. Scolik, Vienna.

into the practical side of the matter in any detail, for many methods of making these friendly greetings will at once occur to our readers. Fancy mounts in plenty, with suitable mottoes and ornamentation, may be obtained from the dealers, and these require nothing more than an ordinary print of some dainty or interesting subject. For those who wish to do more ambitious work the whole field of genre is open, and double printing, fancy backgrounds, pen-and-ink or wash surroundings, etc., may be pressed into the service. Those who wish to introduce humor or satire into their cards might do worse than turn up their "Photographic Pastimes" (Iliffe), "Photographic Amusements" (Scovill), or a recent issue of *The Photographic Review*, and make use of some of the many methods of "freak photography." An instance of this work, the result of multiple exposures, is given elsewhere in the present issue, and further particulars are promised for next month.

An example of the more elaborate style of photographic Xmas cards, from Ch. Scolik, of Vienna, should prove a useful suggestion to the

decorating a Christmas or New Year Card of the shape indicated by the annexed outline sketch. The prints sent in may be any size, so long as they are proportional to the sizes indicated, viz.:—



Head-piece 2 3/4-in. × 1 1/8-in.
Circle 1 3/4-in. diam.
Tail-piece 4-in. × 1-in.

If the work is thoroughly good, and the competitors are agreeable, we can probably sell for them for a good price the right of reproducing in Xmas-card form; so that even those who do not win the prize may receive equally good remuneration.

Prints must be in our hands not later than November 20th.

They must be mounted on plain cards trimmed to the size of the prints.

Each set must be in a separate, unsealed envelope bearing the name and address of sender, who may enter as many sets as he likes.

We claim the right to reproduce in our pages the prize set, and the three sets next in order of merit, but reserve the copyright for the producers, and undertake to place their work, if desired, before the leading buyers of such copyrights.

Prints that are to be returned must be accompanied by stamps for the purpose.

Constructive Criticism.

No. XI.—The work of H. H. Hay Cameron.

BY GLEESON WHITE.

To attempt to set down in black and white an adequate appreciation of Mr. H. H. Hay Cameron's work, is to confront a task somewhat appalling. It would be hardly more difficult to write a new and vivid appreciation of a sunny day in June. To prove what nobody doubts, to reiterate what everybody accepts as gospel truth, to re-discover, as if they were novel and startling facts, what everyone has found out for himself long ago, is hardly an undertaking to be attacked with a light heart. For it is sad to confess that human interest is more keenly aroused when depreciation is the object.

To pick a man's work to pieces always amuses a certain number of people, but to narrate calmly its unbroken record of success, and to point out how it fulfils admirably all the artist set out to achieve, is often dull reading. Therefore at one's wits' end to discover a new point of view, one is baffled and has to fall back on the familiar lines. If you ask Mr. Cameron what he considers to be the chief item essential to successful portraiture, he will tell you that it consists in a photographic artist being intimate with his sitters, in his knowing something of their tastes and their characters.

He feels it all important that the photographer should be able to distinguish between the accidental manner of a subject about to be photographed, whether unduly nervous or preternaturally calm, and his (or her) normal bearing under ordinary social conditions. All of us, lay and professional alike, know how hard it is to escape being self-conscious when we become aware of the close scrutiny of another person. Even when the one who is looking at us with more than a casual glance be a very dear friend, we become alive immediately to many of our defects.

Possibly a really egotistical person, when he is awake to the fact that a stranger is looking at him intently, merely feels that his physical beauty is recognised adequately at last, but even then he loses his natural manner in efforts to justify the homage. But the average person is more likely to become aware of many painful shortcomings.

I remember hearing a very pretty woman say that if men stared at her rudely she always, in abstracted wonder, gazed as steadily at their boots, and most of them immediately became conscious that their feet were several sizes larger than they had hoped was the case; and the remaining few,

too self-satisfied to be thus agitated, fell a prey to mental fears that their boots might be muddy, or untidily laced, or something of the sort. Now if the consciousness of a chance scrutiny can make a person strained and nervous, the feeling that somebody is gazing steadily at you in a way that you cannot meet his gaze, who means to perpetuate all the imperfections he discerns, whether they are permanent or accidental, is liable to make anybody suffer, more or less, from stage fright. We have all seen loquacious individuals in private life, struck dumb if asked to make a speech. The most self-assured chatterer loses his nerve when half-a-dozen people set themselves to listen to him; aspirates are dropped, grammar forsakes him, and he flounders in a sea of common-places or becomes absolutely silent. But it is easy to advise the average portrait photographer to become acquainted with his clients before he attempts to portray their features, but not quite so easy for him to do so by mere effort of will. Apart from social conditions often preventing his meeting them in ordinary life the time required would appal him. Yet, if he be a reader of men as well as a wielder of the camera, a few sentences exchanged between himself and his model will reveal much, and by a few questions, absolutely without reference to the actual business in hand, he may do much to restore the mental balance.

To explain the diplomatic manner which should achieve this end is impossible. Some people have a natural aptitude for putting strangers at their ease, others inspire a contrary feeling. If we knew the secret, half the popularity of orators, actors, preachers and others, who attract vast audiences, would be at once explained. Yet, as many a doctor has grown famous from his admirable bed-side manner, so it would not be rash to assert that many a portrait-photographer of eminence owes as much to his personal deportment as to his technical skill. And herein, as it seems to me, is the only quality of Mr. Cameron's art that may not be generally recognised. For it is obvious that you can but deduce it from the works of any artist, and that unless you took a plebiscite of the opinions of his sitters you could never bring forward direct evidence in support of the theory. All the same, the first moral to be gathered is that, in dealing with human nature, science by itself is not sufficient; a great deal that is outside most people's philosophy comes into

play. So let those who would achieve high reputations as portrait-makers take heed, not merely of their formulæ and professional experience, but also of their behaviour. We all remember a charming Du Maurier drawing in *Punch* of the well-intentioned photographer, who attempts to put at her ease some haughty English damsel, guarded by a fierce chaperon, with the remark, "Think of 'im, Miss." Possibly, for the proprietor of a peripatetic camera at Hampstead Heath, on a Bank Holiday, this playful admonition would achieve its intended effect, but one doubts its success in the West End.

There is a passage from a half-forgotten book, "The Confessions of Angelina Gushington," too long to quote, which gives you the pen-sketch of a bishop being photographed in full canonicals, and the ingenious method of the wily artist in securing the right expression of benevolence, tempered with justice, which is obviously correct for an episcopal sitter.

But to make people at their ease in one sense, is not always to set men in an easy attitude. We all know people who fall into most grotesque poses when they are entirely unrestrained and excited by conversation. If it were possible to illustrate a hundred of Mr. Cameron's successful portraits, we might find some fresh instance in each—of this admirable artistic selection of nature—which is the quest of all who take the making of pictures as a serious effort. One has but to look at the deliciously informal attitude of the two children here reproduced to see how a most difficult task has been accomplished so easily, that most people would never suspect that it was aught but accidental. Nor, if only this one photogram were in evidence, would it be fair to claim that it was a deliberately selected pose, but while a Kodak might have hit upon one such result in a score or two of failures, in each view will you find Mr. Cameron almost equally successful. In photography even more than in other graphic arts, it is surely the maintenance of a high level that proves the master. For here where much of the arduous difficulty that confronts a draughtsman is automatically rendered, it becomes more than ever easy to be "almost perfect," yet in this context "almost perfect" is merely a synonym for "second-best."

But that the "Henry Irving as Becket," the "Sam Pope, Esq., Q.C.," and a dozen well-known portraits have been reproduced too often to make it needful to include them here, it would be easy to show side by side the complete evidence of Mr. Cameron's control of his subject. So many questions arise on the study of these: pose, lighting, arrangement of background, disposition of draperies and the like form only the first group. Then come the technical matters of exposure,

development, and the rest, and lastly the trimming of the print, so that the face is in the right position. Now to analyse even this one secondary matter thoroughly is not possible in written words. Nor is it, perhaps, a subject that could ever be reduced to mathematical rules, yet that it is of no little importance every photographic exhibition bears witness, and in Mr. Cameron's work is especially noticeable.

The one thing that is conspicuous in Mr. H. H.



MR. ALFRED REED.

By H. H. Hay Cameron.

Cameron's work is "quality." This word is indefinable—and people who distrust expressions that cannot be reduced to mathematically precise formulæ are apt to declare that such an abstract attribute being non-provable must also be non-existent. You have but to look at a certain "portrait of Mr. G. F. Watts, R.A.," by Mr. Cameron, to see that in some way, inexplicable but obvious, the photographic artist has caught no little of the dignified repose that marks the work of the great painter. At first you wonder if it be from life or from a painting; and with no prejudice against photography one cannot but think such a doubt is a high compliment, the more genuine because it is absolutely involuntary. In the miniatures on china, beautiful as they are, the same doubt does not occur, you realise perhaps that no miniature painter with the dexterity of manipulation needed to produce

them would have eschewed color. But it is quite possible for a painter to make a monochrome study by preference, and the portrait in question



By H. H. Hay Cameron.

approaches very nearly the quality that distinguishes a fine sepia drawing or mezzotint. Clearly, the qualities which make a fine portrait-painter must be present in a good photographer.

To preserve the ideal of an English child in one picture, the superb old age of a great painter in another, a graceful and beautiful leader of society in a third—each typical and as distinctive as any types could be—that is a triumph the average popular photographer whose pictures all have a family likeness is likely to under-estimate.

If only the resources of rapid printing, good as is that usually employed in these pages, could do justice to a "portrait of Mrs. Leslie Stephens" by Mr. Cameron, the result would be a revelation to those who do not know it. The face appears early-Italian, and looks like one of the most exquisite of the Madonnas that figure in the work of the real pre-Raphaelites, or in their later disciples, Sir Edwin Burne-Jones and others. So happy is the pose and the accessories that, with no attempt to mimic the peculiarities of the painter they accord with the composition in a remarkably pleasant way that stamps it at once as a *tour de force*. In short, this picture shows that a portrait—only a portrait, no more nor less—may achieve what the carefully chosen model with a feigned expression and all the tricks of lighting, rarely, if ever, succeeds in obtaining. Purely theatrical costume and pose, as in the admirable study of Mr. Alfred Reed reproduced here, represents the triumph of realistic imitation; but the other portrait, devoid of any artificial accessories, has a certain poetic charm that is rare even in good paintings.

Yet all this rhapsody but fulfils the warning

given at the beginning. The charm of personality Mr. Cameron stamps on his work cannot be imitated, other workers in other ways may achieve results no less worthy, but the lessons it teaches offer no mannerisms or tricks. If you are as accomplished technically and as naturally artistic as Mr. Cameron, then you may hope to do as well; but what a young photographer may learn from this artist's work (and a very important lesson it is), to study men as well as chemicals, to rank all the science of lighting and posing as essential qualities, but to reckon still higher a personal selection of the special individual characteristics of the sitter, pre-arranged to yield a definite result. If he can succeed in the attempt without evidence of the care and knowledge so liberally bestowed upon it, and give the impression that the result was merely from a happy thought, so much the better.

Mr. Cameron's Studio is but another proof that in photography the man is everything, and the tools are of practically no account. The studio proper is about 16ft. by 10ft., with a little extension on to which the camera can be run, that increases the length to about 21ft. There is an easterly top-light, very much blocked by adjacent buildings, and a westerly top and side-light free from obstruction. Not a single "accessory" is to be seen in the place, though there are three or four ordinary chairs. There is but one background, a plain cloth of medium slate color, permanently fastened to the wall, and the curtains and blinds are of the simplest



By H. H. Hay Cameron,

description. This almost monastic simplicity in the operating room does not indicate that Mr. Cameron despises refinement, but rather that he objects to every unnecessary complication of detail.

In Natural Colors.

ACCORDING to the *Albany, N.Y. Argus*, Macfarlane Anderson claims to have anticipated both McDonough's and Joly's patents on three-color work,* by about two and a half years. Mr. Anderson is stated to be lying ill (July 5th) in Albany, and only prevented by his illness from taking action to secure his rights. The most curious thing about it is that Mr. Anderson says that he abandoned the Joly-McDonough method as being "wholly impracticable," in which case it seems strange that he should wish to establish any legal rights in the process. According to the *Argus*, Mr. Anderson has patent papers and devices, and says he will maintain in the courts, if necessary, his rights against the claims of McDonough and Joly. He is backed by western capitalists and some New Yorkers, representing an immense amount of money, and an interesting legal battle may be expected. Mr. Anderson expects to go to New York soon, when he promises a further development of his claims.

In speaking of the contention and his probable action to an *Argus* man, Mr. Anderson said:—

INVENTION OF RULED SCREEN.

"There has been contention between McDonough and Joly over the invention of the ruled screen. McDonough filed specifications some three years ago for patents upon photograms in colors in the United States and Europe, but until the appearance of Joly's specifications McDonough had not been able to produce a photogram in colors by his own methods. Briefly stated, the McDonough patents previous to Joly's consist in a sprinkling or dusting of the primary colors in fine subdivisions over a sensitive surface. Theoretically and scientifically, this is entirely wrong, as no colored photograms have ever been produced by McDonough, or anyone else, by such visionary methods.

"After the publication of Joly's system or method of ruling colored alternate lines of the primary colors on a transparent plate and placing such plate in front of the sensitive surface, James McDonough produced colored photograms by this very method, claiming that his invention covered such methods. The fact remains,

however, that in no line of McDonough's specifications do we find such a method specified, and as an unbiassed worker entirely above any gain that may redound from the value of the most practical color process, I would wish it stated here that Professor Joly, the Britisher, was the first to produce such a colored picture and by such means as are now claimed by McDonough.

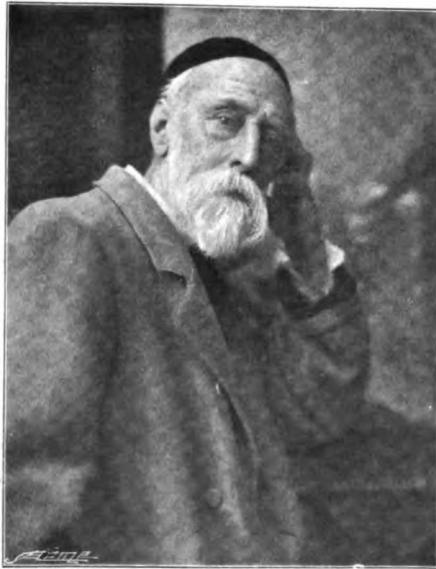
"Regarding my own color inventions, which cover a period of some ten years, I am in a position to show that such ruled screens as are now used by McDonough and Joly were used by me some two and a half years ago, and in a correspondence upon such matters with A. C. Austin, of Albany, I forwarded him specimens

of those color screens two years ago. This very system of obtaining colors was set aside by me as wholly impracticable, my many years' experience both practically and scientifically in the three-color process, as invented by me, proving the futility of such a method. By such a method I could never hope for rapid exposures, or practically instantaneous results, and if a process is to meet the demands of the public in general, it must fulfil these requirements.

"Another factor of greater moment, however, in this color-screen process, is the utter unreliability in securing true color values. This difficulty and the shortening of exposure can only be overcome on an entire dismissal of the color-line screen, and after two years experimenting, the fol-

lowing method was evolved by me and is now patented in this and the principal European countries: The exposure is made practically at one movement, and requires no longer in a good light, nor any more necessary attention than that given to ordinary instantaneous photographic pictures.

"The ruled color screen I have entirely dispensed with, and use a ruled glass screen, the lines on it being opaque and so close together that they cannot be seen without the aid of a microscope. The opaque lines are twice as wide as the intervening space between them. To produce negatives giving the true color values from any desired subject I use this screen in front of an orthochromatic plate, or other suitable sensitive surface. The first exposure may be made for the red values. The second



G. F. WATTS, R.A.

By H. H. Hay Cameron.

* See *The Photogram*, February, and also June.

exposure may be, say, for the green. In making this second exposure, the wire or glass screen, as the case may be, is moved across the face of the sensitive plate, to a sufficient extent to cover the parts previously exposed to the action of the light for the production of the red values, thus protecting those parts from further light action and exposing equal adjacent portions to the action of the light for green values. The third exposure for the blue color value is proceeded with in a similar manner, the screen moving across the sensitive film a like distance as in the two previous exposures, and presenting the remaining unexposed parts of the sensitive surface to the action of the blue rays, the opaque lines or wires again protecting the parts previously exposed from further light action.

"From this it will be perceived that the exposure is enormously reduced in dispensing with the colored screen.

"The second point of interest to those investigating the scientific details of this photographic method is the fact that as each particular color is registered on its particular part of the sensitive plate it is securely protected from any further action given by any of the other colors. For instance, to illustrate: Supposing the picture to be a landscape, blue sky and blue sheet of water, prominent features. With Joly's method, when the blue values are required to impress the plate they should simply act through the blue lines alone. The scientific fact remains, however, that when the red ray-filter is inserted the action of the red is also bound to affect the blue, and to the ordinary scientist the reason is obvious. Red and blue superposed as we would have in such a case, makes violet, and as any plate is sensitive to violet we would have violet made from the blue of the lined screen and the red of the filter inserted in the lens. This would mean, in place of a blue sky, one more or less reddish purple. When it came to a question of delicate tints, such as we have in the flesh colors in the face, hair, etc., we would find the colors in our photogram by such a method far from being like those of the original.

"In a New York paper of June 25th, Mr. McDonough claims to apply his invention to the production of colors in one printing by the half-tone methods. I would say in reference to this, that so far as I am aware at this time, no one holds that position, or patents controlling such an invention but myself. An extract from my patents regarding this feature reads as follows:—

"To produce half-tone pictures I place immediately in front of the color-value screen a frame, having tightly stretched across it very fine wires, which are parallel with each other and so fine and close together that a stippled, or half-tone effect, will be produced. The wires in this half-tone frame should preferably lie at substantially right angles to those of the color-value screen, and the frame supporting them is stationary."

"If Mr. McDonough can produce any evidence, either from the government patent office, or any work done by him by this half-tone method, which he claims, I would be pleased to see it."

The *Newquay Directory* has discovered another discovery of photography in natural colors, and states, "that after seven years of patient investigation, our townsman, Mr. Wallace Bennetto, has attained what has for some time appeared to be an unrealisable dream, viz., photography in colors by purely photographic means."

It is said that Mr. Bennetto refuses to show these wonderful results to photographers, but the editor of the *Directory* speaks in enthusiastic terms of the pictures he has seen. George G. Bullmore, also of Newquay, thinks that the editor has been deceived, and in the issue of the *Directory* for July 31st, challenges the editor to produce within one month such pictures as have been described. If the pictures satisfy photographic experts, Mr. Bullmore is prepared to pay £20 to a local charity, on condition that if the pictures are not satisfactory the editor of the *Directory* pays that sum.

In the following issue the editor defends himself, but states that Mr. Wallace Bennetto refuses to consent to the challenge, "firstly, because he regards the whole letter as based on the implication that he does not speak the truth. This, he says, puts the matter entirely out of court as far as he is concerned. Secondly, that he is not aware that it is usual to meet any inventor with what in his opinion is a common street bet. Thirdly, that he does not feel bound to consult anybody as to when or how he shall prove the validity of his discovery. He has stated that he will hold a demonstration during the season, when he expects to satisfy even the Thomas-like friend of Mr. Bullmore."

In concluding, the editor of the *Directory* says that he will undertake that the photograms as described shall be reproduced on or before Nov. 1st.

The correspondence reminds us of the natural color pictures announced some time ago by Colin Campbell, which, on our own examination and testing, appeared to be simply silver chloride prints tinted with aniline colors, and not very excellent work at that. It is also reminiscent of the work of Arthur Jane, of Bodmin, samples of whose work have been on view in our show-room for some time. Mr. Jane states in a letter to *The British Journal* that he hopes to have them on exhibition at Pall Mall this year. It is a pity that these men who claim important inventions should not consider them worthy of either patenting or free publication. While they attempt to hide their work in a cheap-jack mystery, they cannot expect much respect from craftsmen or investigators.

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Prize Competition No. 11.—"Beauty Spots of London Town." A fair number of entries, but most of the work consists of views of modern buildings which can hardly be fitly termed "beauty spots." The prizes are awarded: First Prize, John Beeby, c/o Tiffany & Co., Union Square, New York, U.S.A.; Second Prize, A. Watson, 98 Earlsfield-road, Wandsworth, S.W. The award of the Societies' prizes will be announced next month.

Practical Operating.

A Lesson, by CHARLES HETHERINGTON, at the American Convention.

"Now here you have a subject," continued the teacher, "with a very long face and, unfortunately, the hair is thin on top of the head, but you meet such subjects in your galleries, and if you take the picture in a careless way you cannot give satisfaction. I take a brush and rub the small amount of hair he has the wrong way until it stands on end. Then I take my water colors again, and selecting a dark color I cover the bald spot on head and comb the hair down over it again. When the negative is developed you will give the gentleman the appearance of having a very respectable head of hair, and he will want to double the original order for pictures. Now to obviate the effect of the too long face I raise the subject's chin as high as consistent, which produces the effect of shortening the face in the photograph; thus you would get a good looking picture from this homely subject, and still preserve all the features."

Next a subject is called from the school who has very deep set eyes.

"If this gentleman sits directly under a top light his eyes will be in a deep shadow and unsatisfactory results will be obtained. I bring the sitter as far away from the light as possible, and turn his face toward the light so as to permit it to shine into the eyes, not bright enough to give the eyes the appearance of staring, but enough to lighten them up and bring them out in the negative."

"Now, I want a lady with a good complexion, and one who has light dress trimmings or lace." In the convention it is not hard to secure any kind of a good looking subject, and it was not in this case.

"The trouble here," said Mr. Hetherington, "is to make a distinction between the light trimmings around the neck and the flesh of the face. Too often the same white effect is secured for the flesh color that is produced for light colored dress goods by using too much light on the face. To obviate this use a cheese-cloth screen between the light and the sitter, thus working in a diffused light and timing the plate well. The same is the case in photographing an old man with white hair and beard. To give such a subject the best appearance you must use a yellowish powder on the beard and hair which will give a clear distinguishing line between the face and the hair and beard. This prevents overtiming on the hair."

A dozen or more subjects with peculiar features were called before the class, and pointers given as to securing the best results in making photographs. A short talk was given with each subject as an illustration.

"The skilful operator," said the teacher, "makes a study of lights and shadows wherever he is. It is not necessary for him to go to his gallery to study the effects of light. He should study them in the ball room or at church, the same as the trained ear of the musician studies sound, and the trained eye will detect a false light as instantly as the musician detects the false note or

the inharmonious blending of sounds. The chief duty of the skilful operator is to make a life-study of lights and shadows and the proper blending of colors, and he should always be the master of the lights and shadows in his gallery."

Almost every sentence of the speaker was a pointer for the operator, and the address and illustrations were of absorbing interest to the large class present, as the numerous questions proved. Without attempting to use the language of the speaker, a few of the suggestions made will prove of interest to those who occasionally sit for photographs as well as to the professional photographer.

Too much light is used in many galleries. Color values are lacking in many pictures.

A first-class gallery should be provided with a case of water colors for retouching the sharp angles of the faces of the subject, many of whom can be greatly benefitted by their use. Mix the colors to suit the complexion of the sitter.

A drooping eyelid can be obviated by sticking a match in mucilage; then ask the sitter to look down at the floor, and push the surplus flesh back over the eyeball; ask the sitter to look up; let it rest for a moment before removing the mucilaged match, and you will be surprised at the result.

To get a proper pose you must always place a tall gentleman in a high chair, so that his knees will not reach up toward his chin, giving the entire body an ungraceful position. This should be done if only the face is shown in the photogram.

A fat person should never sit for a picture. A sitting posture permits the head to sink down into the flesh. In standing the flesh settles down from the head.

Width as well as length must be looked for in the operating room.

When a reflector is used it should be large and of gray color instead of white.

A skilful operator gives life and action to his pictures, an unskilful one always takes the photograms of dead people; or, at least, they have that appearance.

Red hair should be retouched with a white powder, a little yellow being used to take off the harshness, so as to give it a light instead of a dark appearance.

A short face can be lengthened by raising the camera, and a long one shortened by lowering it.

Don't use a small lens for taking big pictures. You lose the perspective entirely if you do.

Remove the camera as far away from the subject as possible.—*Famestown Journal*.

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American Visitors.—The current American visitors' season has brought a larger proportion than usual of photographers to this country. Amongst them may be mentioned Stanley Y. Beach, son of F. C. Beach, editor of *The Scientific American* and *The American Amateur Photographer*; John Fretwell, of Rhode Island, a well-known lantern lecturer; Edward Bausch and Henry Lomb, of the Bausch & Lomb Optical Co., Rochester, N.Y.; W. F. Carlton, of the Rochester Optical Co.; and Max Levy, the well-known maker of ruled screens for half-tone work.

Exhibitions and Competitions.

These particulars are given when the Exhibition is first announced, and again when it is time for entries to close. The Secretaries' names are only given when the Exhibitions are open to receive work.

Name of Exhibition.	DATES.			Prizes.	Open Classes.	Address of Secretary.
	Entries.	Pictures.	Exhibition.			
1. Royal Photographic Society	Sept. 9.	Sept. 10.	Sept. 28.	B.	Open. No Classes.	12 Hanover Square, London, W.
2. Photographic Salon		Sept. 14.	Sept. 24.	None.	Open. No Classes.	Dudley Gallery, Piccadilly, London, W.
3. <i>Hearth and Home</i>		Sept. 7.		Cash.	A.	6 Fetter Lane, London, E.C.
4. Durham Floral Soc.			Sept. 8-9.			
5. Leicester Photo Ex.			Nov. 24-26.	S. B.	One.	T. Brown, 68 Church Gate, Leicester.
6. Sandell Exhibition			April 1 to May 31, 1897		Open. No Classes.	Sandell Works Co., South Norwood, S.E.
7. <i>Barnsley Chronicle</i>	Sept. 30.	Sept. 30.		Cash.	2 A.	"Chronicle" Office, Barnsley.
8. <i>Magic Lantern Journal</i>				Cash.	A. (lantern slides)	Carthusian Street, London, E.C.

A—Amateur. P—Professional. G—Gold Medal. S—Silver Medal. B—Bronze Medal. C—Certificate.
Cm—Complimentary Medals given to every exhibitor whose work is hung.



The increased expense and value of the present issue must be obvious to all our readers, and it will be continued, in one way or another, month by month. For it they have to thank the advertisers, whose increased and steady support of late have enabled us to make such change. "One good turn," etc. Our advertisers announce in our pages all that is new and good. If you mention these pages when ordering you encourage the advertisers and help us very materially.

"**Prints**," "**Current Topics**," etc., are this month set in nonpareil instead of brevier. This, while materially adding to the cost of the magazine, makes a saving in space of about two pages monthly, so that articles and illustrations can be increased to that extent. May we remind our readers of what we have often told them before: namely, that we regard our magazine as a co-operative effort to improve and advance photography. We are always anxious to see, and to reproduce for our readers any useful experiences that may have befallen their fellows; or any pictures of peculiar interest. Amongst our large circle of friends there must be a wealth of material.

The S.A.P., of New York, and the New York Camera Club, have amalgamated and become incorporated under the name of "The Camera Club." The rooms are 113 West 38th-street, New York.

The N.A.P.P. joined forces with the Convention, but had its head-quarters at a different hotel, in Leeds. Its next meeting will be held at Anderton's Hotel, Fleet-street, E.C., on the Monday following the opening of the R.P.S. Exhibition.

At a recent Garden Party in South London the whole lawn on which some 500 persons were dancing, was illuminated with acetylene gas, the arrangements being made by manufacturers of the Incanto Gas Generators. The American Insurance Companies unanimously refuse to take risks on buildings that are lighted with acetylene. No doubt they will soon get over this prejudice.

Birt Acres and his kinetoscope have been in luck lately. They appeared, on July 21st, in the grounds at Marlborough House, before the Prince and Princess of Wales and a royal party. A disc 1 ft. x 8 ft. 6 in. was used, the figures life-size, and the exhibition went through very satisfactorily, so much so that Mr. Acres received permission and special facilities for taking kinetoscopic pictures of Princess Maud with Prince Charles.

In Shakespeare's Country is the title of a lantern lecture for which our Editors are now booking dates. The lecture will be given to public audiences only, and British dates are vacant from the middle of October to the end of February (1897), while American engagements will be made for March and April, 1897.

The Father of Photography, H. Fox Talbot, is to have a memorial in the form of the restoration of Lacock Church. It will be remembered that Talbot lived at Lacock Abbey, near Bath, which place was represented in several of the prints in his "Pencil of Nature," and other early work. Photographers ought to subscribe readily to such a memorial, and we trust that some representative body will take up the photographic collection.

The Testimonial to the late Thomas Samuels, has been completed with a business-like promptness and absence of friction that does credit to Lambert Matthews, who organised it. The idea suggested in a recent issue has been carried out. A memorial brass has been placed in the Parish Church at Hadley, with which Mr. Samuels was so closely connected, and the balance has been handed to his widow, to whom it will be a most valuable help. The cost of the memorial brass and the whole expense of raising the fund, including printing, postage, etc., is covered by £8 8s., so that the substantial balance of £243 is handed to Mrs. Samuels.

Thought.—At the recent American Convention, Dr. Edward L. Wilson eloquently urged his hearers to use more thought in their work. In commencing his address, he said:—"One of the most enjoyable departments of my labors arises from the constant receipt of examples of their work from my subscribers. From these I gather courage when they prove to me the wondrous strides made by some of our craftsmen; but often I am depressed when I observe how much better results could have been secured if only a little more thought had been given to details. A splendid conception is often ruined by the thoughtless neglect of a wrongful line, a mischievous spot of light, or an inharmonious accessory. A plea then for more careful thought, with a few words as to the power of thought in the practice of photography."

Artificial Watermarks (by George Seamoni, St. Petersburg).—(1.) A perfectly horizontal glass plate, previously powdered over with talc and lightly rubbed over with cotton-wool, is coated with a 2% solution of leather collodion, and after drying, a well-skimmed hot solution of chromated gelatine, containing a little Newman's ink (of thin consistency) is poured on.

a. 80 grains Nelson's amber gelatine.

250 " water.

b. 10 grains bichromate of potash dissolved in

60 " water, to which is added

10 " honey or cane sugar.

When the gelatine is almost set the plate is transferred, face downward, into a light-tight ventilated cupboard, con-

taining at the bottom an asphalted zinc tray with pieces of chlor. calcium; the plate will be completely dry after about twelve hours, and can then be stripped, the film being either kept between glass plates for two or three days until required, or it can at once be placed in the copying-frame, together with the stripped collodion negative, both collodion sides being pressed well into contact.

The exposure is sufficient if, on partly opening the copying-frame in the dark room, the stronger parts of the picture are visible by transmitted candle-light. The film is then taken out and, by means of an iron roller, coated with vulcanised rubber; is squeezed (collodion side downward) on a stout piece of plate-glass, which has been coated the day before with a rubber solution in benzine. The edges must be carefully painted over with rubber solution and, after drying, the film can be developed by means of several changes of hot water, until after about an hour's washing all the unexposed parts of the gelatine are removed.

The resulting picture is still too much swelled, and must be hardened with a 90% alcohol, and then stripped off the plate together with the collodion, care being taken to remove the adhering rubber.

(2.) In order to obtain artificial watermarks from such a film, we require a strong burnisher and a highly-polished steel platen upon which the film is evenly spread, covered with a sheet of structureless medium thick paper, and this again covered with a sheet of zinc, 1½-mm. thick, and the lot drawn through the machine.

W. B. Woodbury, in London, was the first to indicate a very similar method for the production of his artificial transparencies, his process differing but little from the above.

There is a vital difference, which must be well remembered, between genuine watermarks (filigree paper), such as used for bank notes, etc., and artificially obtained marks as here described, in so far as the latter quickly disappears when the paper is thoroughly damped, whilst a genuine watermark becomes even more prominent under this treatment.



1. "The X-Rays." By Arthur Thornton, M.A. Price, 6d.; post free, 7d. London: Percy Lund & Co., Ltd.
2. "Photography for Artists." By Hector Maclean. Price 2s. nett, post free, 2s. 3d. London: Percy Lund & Co.
3. "Photography Annual, 1896." Edited by Henry Sturmev. Price, 2s. 6d. net; cloth, 3s. 6d. net; postage 6d. London: Iliffe and Son.
4. "Early Work in Photography." By W. Ethelbert Henry, C.E., F.R.P.S. Price 1s.; cloth 1s. 6d. Post free, 1s. 1½d. and 1s. 7½d. London: Dawbarn & Ward, Ltd.
5. "Shakespeare's Town and Times." By H. Snowden Ward and Caroline Weed Ward. Price, 7s. 6d. nett; post free, 8s. London: Dawbarn & Ward, Ltd., 6 Farringdon-avenue, E.C.

A Stereoscopic Radiogram of two mice is given as a supplement to *Photographisches Archiv* for the first of August.

Canada will not be behind with her work in our annual, for as we go to press there is promise of manuscript and pictures to follow by next mail.

The American work received for *Photograms* of '96 is simply charming. It includes the principal pictures that were recently bought by the United States Government.

Archives of Clinical Skiagraphy, Part II., contains a further series of radiograms of great interest to surgeons, together with descriptive notes by Sidney Rowland, B.A.

Radiography as an aid to Diagnosis, an excellent paper contributed to the "Birmingham Medical Review," by Dr. Hall-Edwards, has been reprinted in pamphlet form for private circulation.

Die Halbtoneprozess is the German translation by Dr. G. Aarland, of Julius Verfaesser's book on half-tone work.

In addition to the illustrations used in the British edition, there are several examples of half-tones, both on zinc and copper.

The Sketch of Christ's Hospital on first page of this issue is from a pen drawing by G. S. Turner, and is used as a title to the "Views of Christ's Hospital," by Freeman Dovaston. The drawing was made from a photogram by Mr. Dovaston.

Convention Groups are given by *The British Journal* and by *Photography*, in their issues for the week ending July 25th. The one in *The British Journal* is provided, as this paper's reproductions always have been, with a key giving the names of the persons represented.

The Theory of the X-Rays is very fully dealt with in a little handbook by Arthur Thornton, M.A. (1). Starting from "Longitudinal Vibrations," the author considers the whole physical question, and gives a number of diagrams and illustrations that are very helpful to an understanding of the various theories of the subject.

Photique Art.—Frank F. T. Weeks writes to say that the brief description we gave in a paragraph last month is not correct, as the patent method to which we there referred is now the property of Riley Bros., Ltd., and Mr. Weeks' photique art productions are not made by this process. Mr. Weeks says that what he proposes to produce is "a series of works from living models, of many nationalities, of both sexes and all ages, elaborately and accurately costumed with artistic scenic effects and novel paraphernalia, illustrating an unlimited variety of subjects."

Notes Sur la Photographie Artistique, by C. Puyo, is a very important addition to our literature on the art side of photography. Several examples of M. Puyo's work have been reproduced in our pages, and in those of *Photograms* of '95, so that our readers are well acquainted with his style. The letterpress which accompanies the illustrations in the book now under notice, is practical, and thoroughly helpful to the worker who would produce pictures by means of the camera, and is not by any means confined to a description of the illustrations. These include eleven photogravures, and forty half-tones, as well as one or two diagrams in illustration of the remarks on lighting.

Pictures for "Photograms of '96" should be submitted at once, for already a goodly number have been selected, and when this is read, the early sheets of the book will be printing. We shall reserve considerable space for the work shown at the exhibitions, but some very fine work for the exhibitions has already been submitted and reproduced, and we are anxious to have the work as far forward as possible; especially as we have enlarged the book to 112 pages. With the co-operation of the exhibitors we hope to issue the annual very soon after the opening of the exhibitions, thus making it an inducement to the public to visit the galleries and a guide to them while there, as well as a souvenir.

Photography Annual for 1896 (3) is well worth buying, well worth reading, and well worth keeping. Valuable as a book of reference for everyone interested in photography, its principal feature is the masterly series of resums of the year's work. They and their authors are as follows:—"Progress in Photographic Chemistry," by C. H. Bothamley; "Photographic Optics," by Chapman Jones; "Photo-Mechanical Printing," by T. Bolas; "Artistic Progress," by the Rev. F. C. Lambert; and "Astronomical Photography," by Albert Taylor. The sections dealing with the year's publications and its new apparatus and materials are monuments of the patience and ability of Chas. R. Rowe; and the "selected articles," few in number, are excellent in quality and full of practical value.

A Handsome Souvenir of the Leeds Convention is the colotype album issued by Watkinson & Co., Carlton-hill, Leeds, specially prepared for those conventioners who accepted the invitation to visit the Carlton Camera Works. To those who were not able to pay the visit, Messrs. Watkinson & Co. still offer to send a copy of the album on receipt of request. The book is an interesting example of Leeds industry, for not only does it represent a Leeds camera-making works, but the photography and colotype are also of Leeds production, the work of J. Houghton, of New Wortley. The place is described by R. Wilberforce Starr, and the illustrations include a dozen colotypes, exterior and interior, from which it will be fully gathered that the place is arranged for serious work rather than for ornament. Watkinson & Co. undertake every branch of camera making, even including the brass founding, which is not usually done on the premises by camera builders.



FONT OF SHAKESPEARE'S BAPTISM.

A Beginner's Hand-book (4), which is really novel in design, has been prepared by W. Ethelbert Henry, C.E., on lines which we have long considered the best for teaching photography. All hand-books that we have seen make the fundamental error of inducing the beginner to attempt the most difficult part of photographic work, viz., exposure and development. The most complex of the calculations, the most intricate of the unknown apparatus, and the most trying of the new conditions—the dark-room light—are all together piled upon the poor novice. And not only so, but he is told to produce a thing of which he (usually) does not even know the appearance, and which the writer can only describe in words that have no meaning for the learner. The new book gets over these difficulties as thoroughly as a book well can. In the first place it contains an actual negative and a positive of the same subject, on celluloid, so that the learner obtains an idea of the appearance of a negative and a positive transparency. In the second place, it begins by talking of printing and instructs the beginner to make his first attempt with a leaf or similar natural object, following with prints from the celluloid negative. After the first principles of light-action are thus instilled, lantern-slide making by contact is taken up. The negative is again used; and the positive forms a guide to the result that should be obtained. Having thus gained a knowledge of development, the learner can attack the greater problem of exposure with a chance of recognising over and under-exposure. Ethelbert Henry is a good teacher, though somewhat too dogmatic, and though we scarce agree with some of his contentions, we recognise that his book is a clear, concise guide, and one with which the would-be photographer can scarce go astray.

Photography for Artists (2) is quite a different subject from Art for Photographers, and it is pleasant to have a change—which is given in Hector Maclean's latest book. The matter seems thoroughly practical, the arrangement is good, and the subject is illustrated by a wealth of quotation and references that shews Mr. Maclean to have made a very careful study of the subject. The use of photography in producing studies for artists, and for reproducing works of art, is fully considered, and several chapters are devoted to the limitations of photography—distorted perspective, false tone-

rendering, halation, etc. The latter should be especially valuable to painters whose photographic work is done for them by others.

The Gem in Woody Warwickshire is, undoubtedly, Stratford-on-Avon, and there our editors have spent their very brief spare time for the past three years. The result is a book on "Shakespeare's Town and Times" (5), about the merits or demerits of which we have little to say. It is an instance of practising what we preach, for we have always urged that photography should be pursued as a means to an end, and not as an end in itself. Of course the pictures are a main feature of the book, and without saying anything as to their photographic value, we can say that the block-making, by The Swan Electric Engraving Co., and the printing, by Allen & Carruthers, leave nothing at all to be desired. The work of arranging such a book, or even a complete illustrative series of lantern slides, has many incidental advantages, one of which is that it brings the worker into friendly contact with a number of educated and literary people with whom it is a pleasure and a profit to associate. Serious work always raises the status of the worker, and increases the respect felt for him by his fellow men.

But this is rather beside our point. The book of which we are writing is on entirely different lines from any book ever published on Shakespeare, and, though it would seem as if no new matter were possible on such a subject, it is a fact that many of the most interesting subjects have never been photographed or never been reproduced before. Our publishers have done their share of the work well; and we believe that no more acceptable gift-book is likely to be issued this year. We give three of the minor illustrations:—Snitterfield Church, where the poet's father was baptised; the font in which the poet himself was baptised; and the gateway under which it is alleged he was taken to meet Sir Thomas Lucy, after being caught red-handed as a deer stealer.

The Lens Articles commenced in the current issue are an attempt to put straight some difficulties and perplexities. Two very simple lessons will be followed by matter more advanced; until the December issue sees the completion, with a valuable and practical supplement in the form of a lens-testing chart.



CHANCEL DOOR, SNITTERFIELD CHURCH.



GATEWAY, CHARLECOTE HOUSE.

Blocks from "Shakespeare's Town and Times."

The Jubilee Number of *The Scientific American* is a marvellous representation of the mechanical and material progress recorded in the last fifty years. Almost every leading branch of human industry is treated by a specialist who tells, in a practical but fascinating way, the fairy tale of man's triumph over nature. The reading of such a publication might well make us feel proud of our humanity and of our share in the great advancement of this truly great century. Reproductions of pages of the early issues of *The Scientific American* bring us in touch with the matters of interest in 1846, and the articles that follow are illustrated, almost entirely, with the blocks that were originally used to represent matters of novelty, but now are only matters of history. Incidentally, the illustrations show the striking advantages of modern photography and process reproduction. Incidentally, too, the issue shows that human progress has not all sprung direct from the British portion of the English-speaking race, as we are sometimes apt to imagine, and that even fifty years ago the Americans were

\$800 (or say £200). For nearly forty-nine years Mr. Beach continued as editor, and only on January 1st of this year was suddenly snatched by death from the scene of his labors.

About Patents.

2,986. *Non-Halation Plates*. C. F. Oakley, Pall Mall Factory, Parchmore-road, Thornton Heath, Surrey. Feb. 11th, 1895.

3,197. *Hand-Camera Changing Method*. C. Howse, 24 Gratitude-road, Easton, Bristol. February 14th, 1895.

3,277. *Flash-Light Apparatus*. H. E. Rathburn, Pawtucket, and F. J. Berry, Union-street, Pawtucket, Rhode Island, U.S.A. February 14th, 1895.

3,341. *Combined Camera and Change Box*. F. Stubbs, Edge Gate, Osborne-road, Sheffield. February 15th, 1895.

3,356. *Ceramic Enamels*. G. J. Atkins, 1 Moselle-gardens, Tottenham, Middlesex. February 15th, 1895.

3,613. *Producing and Viewing Colored Photographs*. B. J. Edwards, The Grove, Hackney, Middlesex. February 19th, 1895.

3,634. *Front-Board Attachment*. H. J., A. S., and G. A. Spratt, Tudor Works, Tudor-road, Hackney, London.

3,784. *Color Photography*. F. E. Ives, 2,750 North Eleventh-street, Philadelphia, U.S.A. February 21st, 1895.

3,985. *Change-box Mechanism*. A. C. and A. A. Smith, 26 Hanover-street, Peckham, London. February 25th, 1895.

4,339. *Photographic Lenses, Telescopes, and Microscopes*. A. C. Biese, 32 Massenstrasse, Berlin. February 28th, 1895.

4,428. *Film Holder*. G. P. Spooner, 16 Duncan-terrace, Islington, London.

5,029. *Magic Lantern* applied to advertising. J. A. Cundall, 3 Norwood-place, Victoria-road, Leeds. March 9th, 1895.

5,107. *Tripod Stands*. A "walking-stick" stand. A. M. Morrison, 42 Grafton-street, Glasgow. March 9th, 1895.



"MEMORANDUM" PRENAGRAM.

Actual size (see "Trade").

busy and progressive. It is useful to be reminded that the first steamboat was American-built, the first steamboat to cross the Atlantic was American-built, and the first steamer to cross the Atlantic by steam only, was American. These facts are not specially pointed out in *The Scientific*, whose writers are perfectly cosmopolitan.

Cycles, sewing machines, armoured war-vessels, agricultural machinery, and an immense number of other comforts and conveniences are products of the last half century, as well as those more striking achievements of which we often speak—the phonograph, submarine telegraphy, etc. Of course, photography takes its place amongst the triumphs of the half-century, and, though the article is not signed, is no doubt treated by our friend F. C. Beach.

Not the least wonderful development recorded in this special issue is *The Scientific American* itself, with its associated bureau of patent-agency, etc., and in closing the wonderfully interesting special number we have but one feeling of regret—that Alfred E. Beach should not have lived to see the jubilee. He it was who in 1847, ten months after the starting of the paper, joined Orson D. Munn, to purchase it, with all its rights, goodwill, plant, etc., for

2,986. *Non-Halation Plates*. Relates to a method of preventing halation. The plate or film is first coated with a non-sensitive layer of gelatine, which is colored with a solution of permanganate of potash. Over this the sensitive film is coated. The color does not pass into the sensitive layer, and is discharged during development.

3,277. *Flash-Light Apparatus*. Relates to a magnesium flash lamp and screens for diffusing the light. In fig. viii a star wheel containing the flash powder in cups (M) on the ends of its arms is mounted on a stand (C). The rod (G) forming one side of the stand is insulated, and along this an electric current is conveyed to the top arm of the star wheel through a spring which presses on the arm. A wire passing through the powder is made incandescent by the electric current when the circuit is closed by a contact fixed on G, and actuated by a pneumatic ball (S). After each flash another cup is brought into position, and into the circuit by turning the wheel by ratchet gear actuated by a handle sliding on G. A small screen (H) is fixed on the stand between the flash and the sitter.

3,356. *Ceramic Enamels*. Relates to an improvement on the carbon process as employed to produce ceramic and other photograms, to prevent the pigments acting prematurely on the bichromatised gelatine. The mineral and enamel colors are treated with chromic compounds sufficiently to saturate their metallic components before mixing them with the gelatine.

3,613. *Producing and Viewing Colored Photographs*. Relates to a camera for producing negatives representing the three primary colors, the same or similar apparatus being employed as a graphoscope or a magic lantern. Fig. vii shows a section of the camera in which the image formed by the lens (B) is split up by the semi-transparent mirror (D¹), about one-half the light being thrown up on to the sensitive plate (C¹), through a red screen (E¹). The light transmitted through D¹ is again partly reflected by another mirror (D²) on to a plate (C²) with a green or yellow screen (E²), and partly transmitted on to the plate (C³) with a blue screen (E³). The camera may be made double, to produce stereoscopic pictures. A graphoscope or stereoscope, on the same principle, is described, colored positives or transparent positives with colored screens being substituted for the sensitive plates of the camera. Also a magic lantern, with the necessary lights

and condensers, is described to combine the three views into one picture on the screen. An ordinary triple lantern may also be used. The negatives may be used to produce three printing surfaces, which may be printed from with three colors, as in chromo-lithography. (Grant of patent opposed.)

3,784. *Color Photography* (fig. vi). Relates to a camera for producing, simultaneously, three negatives, representing primary colors of the type described in Specification No. 4,606, A.D. 1892. The rays of light from the object enter through lenses (w^1 and w^2); part of the light passes through the inclined glass plate (d) and is reflected by a mirror (i) on to another mirror (m), whence it is reflected through the lens (F) and the colored screen (F^1) on to the sensitive plate at the back of the compartment. The part of the light which is reflected at d is again divided by the glass plate (f), the reflected portion being twice reflected by the mirrors h and i , and finally sent through the lens (D) and colored screen (D^1) on to the sensitive plate in the middle of the compartment. The light transmitted through f is reflected once by the mirror (g) into the last compartment. The screens (B^1 , D^1 , and F^1) represent primary colors, and are made removable for dusting, etc. The mirrors also are removable, being held against blocks by springs (n). The focussing is done by moving the lens (w^1). Other arrangement of mirrors are described, and also a camera without the back lenses (B , D , F). The camera may be made double for stereoscopic work.

movable part. The invention is shown as applied to a telescope, but it may be modified to suit a binocular, and it is also applicable to photographic objectives and microscopes. The eye-piece (B) is moved relatively to the objective (A) by turning a nut (C) engaging a screw (w) on the tube (x). H is the additional lens carried by a tube (b). A screw (g) attached to the tube (b) has its head guided by a slot (h) in the objective tube (a), and its point engages a spiral groove (d , d , d) formed in the sleeve (c), which is rigidly attached to the nut (C). The groove (d) is shaped according to the nature of the instrument in order to give the required relative movement to the parts H and B .

Principal American Patents.

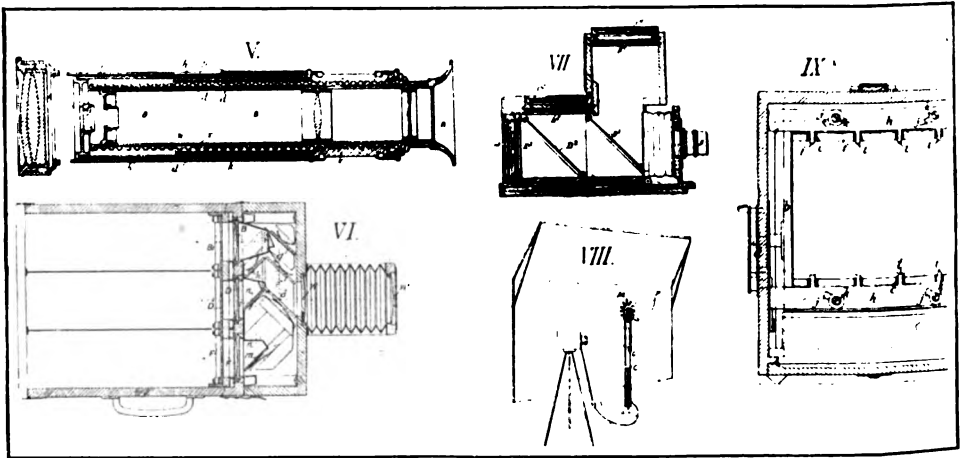
563,496. *Photographic or Surveyor's Stand*. Athol B. Macklin, New York, February 7th, 1896.

563,697. *Magazine Camera*. Christian Umbach. Jersey City, N.Y. June 5th, 1895.

563,853. *Photographic Printing Apparatus*. Wm. Frieze Greene, London. January 20th, 1896.

564,216. *Photographic Shutter*. Richard Nerlick. Berlin. Assignor to Carl Paul Goerz, Schöneberg, Germany.

564,466. *Stereoscope*. Charlie Briggs and Frederick W. Masters, Manchester, England.



The lens diaphragms are fitted between the mirrors. The camera reversed may be used as a photochromoscope or graphoscope, and, if also duplicated, as a stereoscope.

3,985. *Change-box Mechanism*. Relates principally to change-box mechanism, combined with a camera, for dropping each plate after exposure by means of notched backings. Each sensitised plate or film (e , fig. ix), which does not require to be notched, is followed by a backing plate (f), which has notches on two edges which fit on ribs (c) inside the storage chamber. The storage chamber (b) can receive a short lateral movement from an external rod (d), and this movement, by means of pins and inclined slots (h, i) moves the plates (h , i) out and in, so that the teeth (i) alternately engage with and are disengaged from the plates or films and the backings. The result of this is that the plates and backings are dropped, one at a time, into a receiving chamber in front and beneath the storage receptacle. The receiving chamber is covered by a hinge flap, which is folded up so as to exclude light from the lens while an exposed plate is being dropped, the mechanism by which the flap is worked being arranged to lock the changing mechanism when there is danger of lighting. A counter at the back of the storage chamber is actuated by its movement, by means of ratchet mechanism. In the Provisional Specification, a spring-actuated rotary disc shutter, adapted for long or short exposures, is described.

4,339. *Photographic Lenses, Telescopes, and Microscopes* (fig. v). The object is to provide an additional lens in the system, so movable, that while the size of the image is varied by relative movement of the lenses, the image remains at one place, or at a constant distance from the

564,472. *Camera Back*. Harvey B. Carlton, Rochester, N.Y. Filed January 29th, 1896. Serial No. 577,271. Improved arrangements of adjustable spring-held focussing-screen, with accommodation for dark slide between the screen and the camera body.

564,464. *Camera*. Charles B. Withington, Janesville, Wis. Assignor of one half to George W. Wise; same place. Filed November 2nd, 1895. Serial No. 567,754. Relates to automatic exposure methods suitable for the kinetoscopic cameras.

564,729. *Refining Stove for Photographers*. Daniel R. Van Riper, Paterson, N.J. Filed March 23rd, 1896. Serial No. 584,586. A stove for burning paper, etc., waste, and saving the ashes for the recovery of residues.

564,838. *Camera Improvement*. George P. Parradec. Buffalo, N.Y. Filed May 4th, 1895. Serial No. 548,196. An arrangement for adapting long-extension cameras for specially short focus work.

564,874. *Head-rest*. William W. Dirksen, Jamestown, N.Y., assignor of one half to Fred Bauer, same place. Filed September 3rd, 1895. Serial No. 563,309.

In the Newspaper Office.—Samuel C. Fox, of the *South Wales Daily News*, the *Cardiff Times* and the *South Wales Echo*, writes of "that wonderfully interesting and useful *Photogram*, which has been of service to our artist in the office."



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute).

In writing to advertisers please mention "The Photogram."

New Advertisers.

Leach & Company, Brighthouse, Yorks.
 Wilfred Emery, 3 Soho-street, W.
 L. Canesi, 9 Red Lion-street, E.C.
 Vincent & Blaikley, 34 Barbican, E.C.
 "Knowledge," High Holborn, W.C.
 Sampson Low & Co., Fetter-lane, E.C.
 The European Blair Camera Co., Ltd., 9 Southampton-st.
 Geo. Mason & Co., Glasgow.
 Brixton & Clapham Camera Club, Acre-lane, (Annual Exhibition).
 Wellington & Ward, Elstree.

New Goods, etc., Advertised.

Enlargements, etc. Leach & Co.
 Developing, Relouching, etc. Wilfred Emery.
 Photo Postal Wrappers. L. Canesi.
 Blair's Film, etc. The European Blair Camera Co., Ltd.
 The "Ruby" Camera. The Thornton-Pickard Co.
 Ross-Zeiss & Ross-Goetz Lenses. Ross & Co.
 Photo-Engraving. Vincent & Blaikley.
 The Platystigmat Lens. W. Wray.
 Orthostigmatic Lenses. O. Sichel & Co.
 "Lens Work for Amateurs." Whittaker & Co.
 "Three Swans" Platino Matt and Portrait Paper. J. R. Gotz.
 "The Action of Light in Photography." Sampson Low and Co.
 "Shakespeare's Town and Times." Dawbarn & Ward.
 The Parastudio. Geo. Mason & Co.
 The Wellington Negative Paper. Wellington & Ward.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk () indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.*

Manufacturers are requested to post us as early as possible with particulars of their new goods.

APPARATUS.

View-and-a-Half Printing Frame. July 26th. Price: ½-plate, 5s. per doz. ¾-plate, 10s. per doz. 1-plate, 16s. per doz. George Houghton & Son.*

G. W. Tottem, who was for many years with the Eastman Co., has again taken service with the firm and holds a principal position in the Oxford-street house, under Mr. Dickman.

J. H. Skinner & Co. Ltd., registered July 13th, capital £15,000, in shares of £5 each, to take over the business of J. H. Skinner & Co., East Dereham, timber merchants and manufacturers of photographic apparatus.

The Postage Stamp Portraits which we stated last month were made by Josiah Pumphrey, of Birmingham, we find are made by A. Pumphrey, Stanhope-street, Birmingham, who will produce negatives or prints from any carte or cabinet.

The Wray Platystigmat Lens is now ready in seven sizes, from 4-in. to 8-in. focus; and the great satisfaction given by the smaller sizes first introduced seems to promise a good run on the larger lenses now that they are on the market.

The View-and-a-Half Printing Frame, offered by George Houghton & Son, has a very distinct advantage over the old pattern with the back hinged in the centre. The "View-and-a-Half" Frame enables every portion of the

print to be seen without the complete removal of the back, because it allows more than half to be seen at each opening.

The Tourist Lamp, placed on the market by W. Tylar, of Birmingham, needs only to be seen to be appreciated. It is, practically, a camera bellows of red and orange fabric, with metal top and base, and struts to hold it open. When in use any small lamp, candle, or night-light, can be placed inside it, and as it is of large size there is no fear of burning or greasing the sides. Its extensive base and taper shape prevent it being easily knocked over, and the metal rim at the base acts in the same direction. It packs flat into almost no space.

Photo-Decorated Tiles are announced by George H. Grundy, of Duffield-road, Derby. He has very successfully overcome the difficulties of producing ceramic tiles by photo-mechanical means. The main trouble has always been to give a sufficiently heavy coating of ceramic powder to the shadows in an ink transfer or impression from colotype, etc., plates, but Mr. Grundy has got over the matter very simply by printing on the "biscuit" pottery, and giving six or more successive impressions. The biscuit is sufficiently porous to absorb rapidly the "dryers" of the ink, so that the following impressions can be printed almost at once, without any fear of running or smudging. The method is protected by patent, and the results that we have seen are thoroughly satisfactory. At present, only stock subjects from some very charming landscape negatives are being printed, and these will be retailed at about 70s. per square yard. No doubt the manufacturers will soon be prepared to do the work from customers' own negatives, and six inch square tiles that work out retail at 2s. each can only be called revolutionary in photo-mechanical work.

The "Memorandum" Frena is a charming little camera, but practical and business-like withal; and in our opinion is likely to be the most successful line amongst the many successes of R. & J. Beck, Ltd. It is essentially a Frena, with the notched-film changing arrangement, the swing-back, the spirit-level, and the other well-known Frena features. But it is also something more—the successful result of an attempt to make a Frena at a "popular price." In modifying the pattern to enable the camera to be made as far as possible by machinery, many detail alterations have been made, which result in a distinctly improved camera. Light metal stampings are used entirely for the interior works, giving the great advantage of absolute interchangeability of parts. It is unnecessary for us to describe the camera in detail since the makers are prepared to send a handsome little instruction book with full particulars, to such of our readers as may write to them at Cornhill, E.C., and mention this note. Moreover, very full details, with diagrams, are given in our weekly contemporaries of the first week in August. We content ourselves, therefore, with a life-size reproduction of a negative made with the new camera. The picture is carte-de-visite size (3½ x 2½) (see our "Prints" column), and the price of the camera, with forty films, is £2 18s. 8d.

The Setoloid Film, however, promises to be an even more important novelty than the "Memorandum Frena." In it Messrs. Beck claim to have found, "at last," a perfect substitute for celluloid, at an infinitely lower price. Setoloid, they tell us, is a perfectly satisfactory, inert, translucent substance; non-curling, and insoluble in photographic solutions. At present, as the supply is small, they propose to use it for Frena films only, but they talk of a time—not very far distant—when they will be able to offer films, in all regular sizes, at the price of ordinary plates.

A. W. Rider, who has just left the Eastman Co., has been with them eleven and a-half years, and could write a most interesting history of one of the most wonderful business successes connected with photography. The present writer remembers calling upon the Eastman Company some three or four months after it had commenced business, in comparatively small first-floor premises in Soho-square. He

was the first person who had attempted to make the company into a customer; and Mr. Walker, the then manager, has related how, at the end of the visit he said to his clerk, "Thank God! some of these English folk are going to trust us." Mr. Walker had felt greatly depressed at the extent to which he had been ignored by the trade, and he could then have little idea of the extent to which the Eastman business would grow. Mr. Rider, his first clerk and cashier, remained with the firm and rose as it rose, until for the last few years he has been the secretary of the company. Recently, he has made a trip round the world, visiting Australia, New Zealand, the Pacific Isles, and back across the United States. Some most interesting notes of his trip were prepared (with illustrations) for our pages, and will appear in the next issue or two. Of Mr. Rider's business intentions we know nothing, but no doubt he will continue his connection with photography.

CATALOGUES.

GEORGE MURPHY, of New York, sends a whole batch of catalogues and circulars, which give particulars of almost everything imaginable in the photographic line. No doubt he will be glad to send the same to any other interested parties.

W. F. SLATER, of Camberwell, often has real bargains in apparatus, and issues a monthly list of second-hand goods. In the current one we notice a quarter-plate view lens offered for 15. 6d., and surely one cannot wish for anything much cheaper than that.

A SUPPLEMENTARY CATALOGUE hardly seemed necessary when we saw the large handsome general catalogue of McGhie & Co., issued but a short time back, still we have just received from them a supplementary list of 46 pages and cover, which contains a great many additional items, old and new.

THE LATEST LIST of Marion & Co. is devoted to professional matters. The series of accessories is very extensive indeed, and includes a large number of attractive pieces of furniture. A considerable section of the catalogue is devoted to the prices of mounts and mounting boards, and the remainder is occupied with prices of chemicals, frames, and sundries.



Be Brief!—We reserve the right of condensing all correspondence, but undertake to leave the meaning intact.

Personalities barred. Whenever a man is attacked by name, we wait until a proof can be sent, and the attack and reply published together.

Anonymous letters are strongly objected to, and those which are not accompanied by name and address of writer, for our own information, go into the W.P.B.

Painters' Studies.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—May I venture my small criticism on the painters' studies reproduced in your magazine. They look much too forced, and I agree with one of your correspondents that they would be better without fancy hangings, etc. I should like to see more freedom of pose and impressionism—Very truly yours, R.H.C.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—As an old professional, I am distinctly charmed with your painters' studies, especially as they are the products of good schools of painting. I was particularly pleased with the study of "A Lady" in the current number, which, if it had been done by a photographer, I think would have been styled artificial and formal, and relegated to the school of twelve or fifteen years ago. I am not incapable of admiring the beauties of these studies, and I think there is much to be learned by the photographer who will really take the trouble to mentally dissect them, and to study what are the strong and weak points. We may, at any rate, be sure that they are perfectly conventional and sound according to the rules of art, and it is well for some of our extremists to be brought back to sound simple work, even if it is somewhat formal.

I trust you will give us more of these, giving a preference to the studies in which the costumes and accessories are simple.—Yours truly, OLD PRO.

Printing from Bad Negatives.

A Correction.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—The remarks of your correspondent are perfectly correct regarding the adaptation of the carbon process to bad negatives. A very dense negative requires a paper sensitized on a strong bichromate bath; a weak one requiring just the opposite—i.e., a very weak sensitizer. The mistake is one that may easily occur to a writer, but I regret that the transposition has found its way into one of my articles. The correction stands thus: On p. 194, last word of sixth line from bottom of first column, for "weak" read "strong;" on same page, second word of sixth line from top of second column, for "strong" read "weak."—Yours faithfully,

"THE AUTOCRAT."

The W. H. Harrison Appeal.

To the Editors: *The Photogram*.

DEAR SIR AND MADAM,—Will you kindly allow us to publish a final account of the Fund raised as a testimonial to Mr. W. H. Harrison, and to express the thanks of the recipient and his family to all the friends who have so generously contributed to the fund.

The total amount of the subscriptions is £105 4s. and, after deducting £6 11s. (cost of stationery, printing appeals, etc.), there remains a balance of £98 13s., of which £25 has already been handed over to Miss Harrison, in whose care Mr. W. H. Harrison remains.

The balance of £73 13s. is now held in trust for Mr. Harrison, and will be paid over in monthly instalments of £2 to Miss Kate Harrison, for the benefit of her invalid brother.

Should Mr. Harrison recover during the next three years sufficiently to be able to manage his own affairs, the balance remaining unapplied will be handed over to him, or, in the event of his death, to his sister. These arrangements have been made with the approval of all those most closely concerned.

Any further donation received will be added to the fund to be applied in the same manner.—We are, yours, &c.,

FREDK. H. VARLEY.
ANDREW PRINGLE.

[Letters from Drinkwater Butt, Henry R. Eason, and Richard Harding, are in type, but are unavoidably held over.—EDS.]

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THE PHOTOGRAM

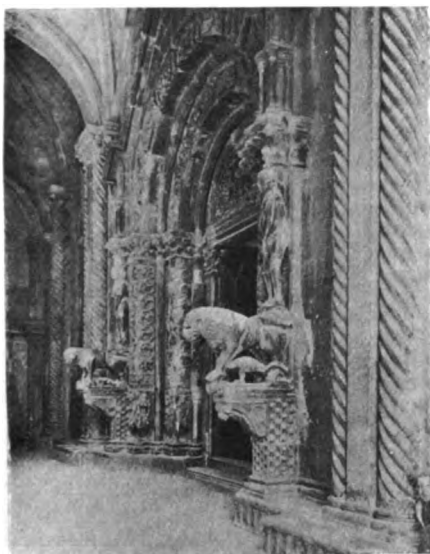
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Dalmatia, Herzegovina, and Bosnia.



TRAU CATHEDRAL, DALMATIA.

By John Bushby.

AMONGST your readers there may be some looking out for foreign lands fairly accessible, not overrun by English tourists or photographers, and to those I can strongly recommend a trip to Dalmatia, Herzegovina, and Bosnia. In the former country the lover of archæology and architecture is in his element, and the snapper can fire off countless films at subjects difficult to equal elsewhere in costumes and customs.

The principal towns worth visiting are Pola, Zara, Spalato, Trau, Ragusa, and Cattaro. From this latter place a drive over the mountains to Cetinje, the capital of Montenegro, is worth doing. The easiest and quickest route is direct to Trieste, *via* Ostende and Vienna; from Trieste the Austrian Lloyds' steamers sail two or three times a week, and there are fairly comfortable quarters to be found in most of the larger towns. Some knowledge of German is rather necessary, though, of course, Slav is more useful still. I can quite believe that a bicycle trip along the Dalmatian coast would be a success, as also through Bosnia; the roads are mostly quite good enough, and I may mention that although accompanied by ladies during a six weeks' trip this spring, there was never a rude word spoken to us. Photography is permitted everywhere, but, naturally, fortified places should be avoided, and a passport is absolutely necessary.

Whilst in Dalmatia I never met a fellow countryman, but whether this would be an inducement to others I don't know. From the Dalmatian coast Herzegovina can be reached by train from the port of Metkovich. Mostar, the capital, is about two hours' journey along the Narenta valley, and here you can well imagine that you are in the East. You move amongst turbaned men, trousered and veiled women, whilst the Turkish children are particularly pretty and attractive. Minarets tower up on all sides, from which the Faithful are called to prayer several times a day; the bazaar is an animated scene, where it will be the worker's own fault if good pictures do not result, whilst a striking feature of Mostar is the old bridge, attributed by some to the Romans. The Narenta defile can be followed either by train, carriage, or bicycle to Jablanica, and then over the Dinaric Alps, through glorious scenery, to Serajevo, the capital of Bosnia. Until now it is you that have been singular in your European costume, but at Serajevo modern buildings are springing up, and fashion and beauty promenade the streets; yet walk round a corner and you are in the bazaar, rubbing shoulders with Turks, and can watch the different tradesmen sitting in their little open shops working—in one street shoe making, in another copper beating, and so on.

From Serajevo the usual route is to Jayce, where those fond of river scenery will find enough to last them a lifetime, including the celebrated Falls of Pliva. Those fond of fishing, and who can spare time, should take tackle, as trout and grayling of good size abound. To get home, a lovely drive to Banjalouka, along the river Vibas, brings you into railway communication with Vienna. For Dalmatia, April and May, also September, whilst for Bosnia, May and September are the most favorable months to travel.

JOHN BUSHBY.

Australian Impressions.

BY ARCHIBALD W. RIDER.

HOME photographers, who may think Australia an El Dorado, make a great mistake, and will find it no easier to obtain gold in that country than in this.

There are already far too many professional photographers, and the result is that competition is very keen in all the cities, far more so than we have any idea of at home.

There is, of course, good and bad work, but the average will compare very favorably with that of the old country. In some instances, one particularly I have in mind, the work is quite as good as—I was nearly saying better than—anything done in Great Britain, and yet for such fine work *ros. 6d.* was only obtainable for a dozen cabinets, and in most cases a really good opal enlargement was thrown in. And all this, when considerably more has to be paid for materials than at home.

The public, however, seem to have their portraits taken more frequently than here, and there is need for it if photographers are to make a livelihood.

In Australia, as elsewhere, good work pays and the best houses, despite the low prices, seem to be in a flourishing condition. The best studios are most luxurious, and are quite up-to-date as regards fittings, apparatus, and accessories.

What struck me as a remarkable circumstance was the number of familiar and celebrated names under which the photographers traded. There were Falks, and Nadars, and Talmas, and Van der Weydes, and many others equally familiar.

Very few were using chloride papers. Most were content with their old and tried friend albumen, although many had made more or less of a half-hearted trial of the various chloride papers now on the market.

Some were sending out work done entirely on enamelled bromide paper, and very good it was. The taste is, unfortunately, all in the direction of a highly-glazed surface, and the cheaper the work the more black and white and highly-polished was the picture.

More advertising in the daily papers is done than in this country, and it seems to pay, judging by the persistency with which it is practised.

There are but few stock houses in the country. The trade is practically confined to three houses, and very well managed. A dealer in Australia needs to have a large capital, for he has to keep a very large stock—at least four months supplies—on account of the great distance from the source. He has, too, to stock a larger assortment of apparatus and materials than is usual at home.

Buying is very close, and the tendency is to sell European goods at home prices, with a consequent depreciation of the manufacturer's profits.

Two of the dealers in Australia are now making very good bromide and enamelled bromide papers, and the trade, when it can, loyally supports local industries. Moreover, there is an idea prevalent that home manufacturers ship stale and inferior goods to the Colonies, but this is a prejudice born, I think, of a past belief that anything was good enough to export. Still, the prejudice undoubtedly exists, and it is important that manufacturers, if

they wish to retain or increase their trade, should bear this in mind and always ship the freshest and best material they can produce. This is all the more necessary when it takes so long for shipments to reach Australia, and after the most trying of voyages.

Photographic societies are no more and no less flourishing than in the old country, and there is just the same lack of interest taken by the members in the proceedings.

An attempt was recently made in Sydney to form a large photographic association for the promotion of the photographic art in all its branches, and for the transaction of any business referring to inter-colonial or international photographic exhibitions, and to provide a central meeting place for those interested in photography, but the scheme could not be carried out.

Just before I left Melbourne, a very commendable inter-colonial exhibition, under the auspices of the Working Men's College Photographic Club, was opened by the Governor, Lord Brassey. There were a large number of prints shown, perhaps too many, and amongst them was work that would compare very favorably with the best work in our own exhibitions.

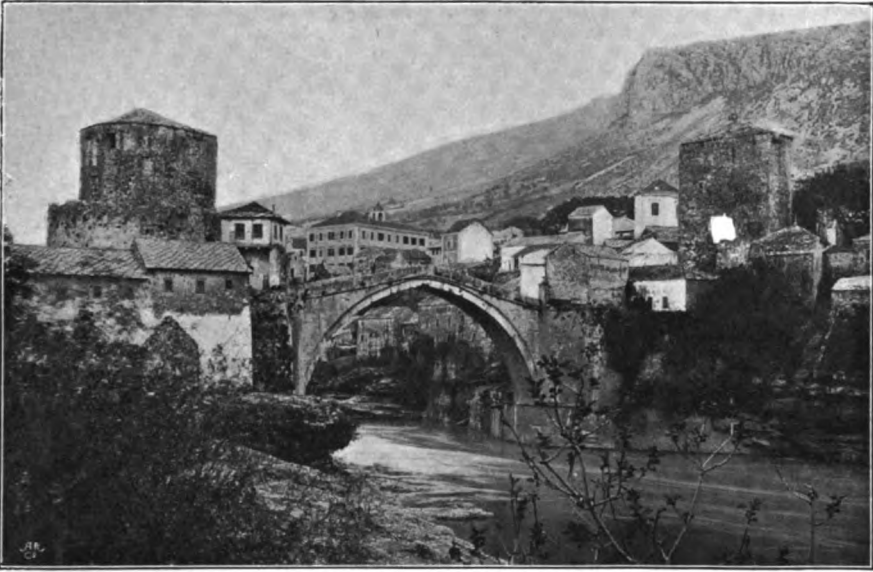
As a country in which to photograph, Australia is disappointing. It is so vast, and the country generally is so flat and waterless, that few opportunities offer for obtaining fine pictures. Of course, to a visitor there are any number of interesting subjects. The buildings, vehicles, tracks, and up-country life generally, are all full of interest and well worth photographing.

One bush scene I have regretted since that I did not take was the breaking-up of a church service, up country between Mount Victoria and the Jenolan Caves.

Outside a small, prettily situated, lovely little church were about thirty horses tied up to the fence, and just as I was driving by in a ramshackle, dirty old coach-and-four (serviceable withal), the congregation came out. A family returning home—I am told they ride sometimes twenty miles to church—passed me. It consisted of a woman with a child in her arms on one horse, and on another her husband with pipe in mouth and hands in his trousers pockets, one arm being passed through the loop of the reins. The incident was pretty and typical of the life up country, and explains why all Australians have such good seats in the saddle.

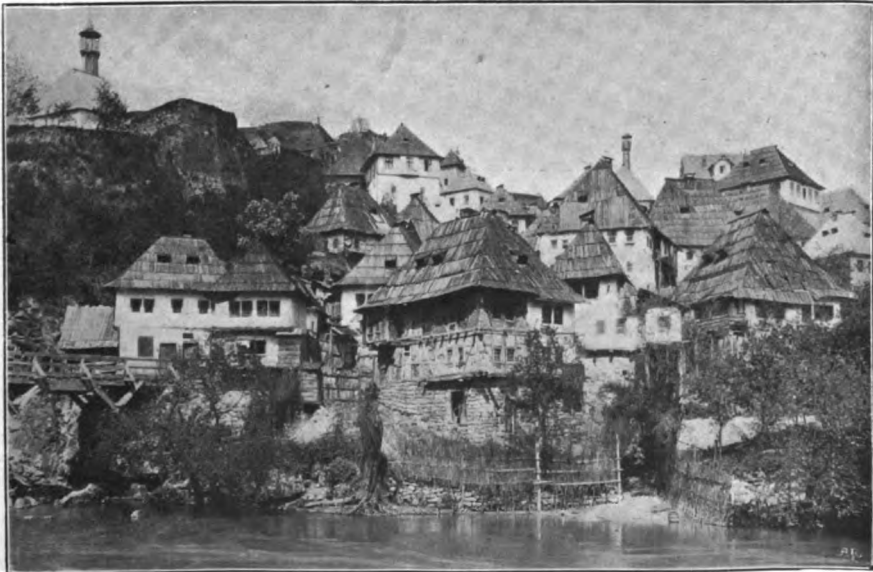
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A Good Idea.—Now that the winter nights are coming on, look over your apparatus, and turn up your back numbers of magazines, and year-books, to see if there are not a number of home-made conveniences that you might make during the winter, and that would be valuable when the spring comes round again. Last year I did so and found some pleasant winter employment, not only for myself, in the carpentry way, but also for my sister, and for a brother who is very handy with metal-work and has a lathe.



THE BRIDGE OF MOSTAR, HERZEGOVINA.

By John Bushby.



THE TOWN OF JAYCE, BOSNIA.

By John Bushby.

A Unique Studio.

THE very able photographic portraiture of W. Crooke is well known at our leading exhibitions, and its producer is universally recognised as one of the foremost half-dozen of our portrait-workers, so that a few notes on his studio and method of work can hardly fail to be of general interest. Beyond this, they will form an introduction to a couple of articles in our next two issues, wherein Gleeson White will draw some valuable practical lessons from a dozen or so of Mr. Crooke's studies.

The general impression of Mr. Crooke's studio reception-rooms is the same as is given by the work issuing therefrom and may be summed up in two words—richness and harmony. The whole air is of substantial luxury, yet without any

hardly do otherwise. Mr. Crooke has an ardent affection for old oak and walnut, for strong and graceful woodwork, and the work done in the constant inspiration of this substantial, honest beauty, cannot well be otherwise than honest and reposeful. The man who understands the art of those old workers in wood, who loves an ancient spinet, and admires a fine old spinning-wheel, has no place in his sympathies for tawdry, meretricious work, for tricky "effects" of strained pose and unnatural lighting, or for pasteboard accessories. He is an artist first, and from preference—a commercialist only from necessity.

The present studio, forty-two feet square, and with a double-span roof as well as side-light along the northern side, gives ample room to place the



INNER RECEPTION ROOM.

suggestion of extravagance or striving for effect, and this, no doubt, arises from the fact that Mr. Crooke has a strong love for the furniture and fittings made "in the elder days of art," when craftsmen were lovers of their craft. Almost every piece of furniture has a history, and is a treasure in its way, and the collection has always prevented any possibility of introducing "accessories," as too often seen in the studio.

The present premises in Princes-street, Edinburgh, are the result of growth. The old studio, forty-five feet by fourteen, is now seldom used, except as a passage-way to the newer studio, as a comfortable waiting-room, and as a gallery of pictures and handsome furniture for which there is not space in the reception room or studio.

It may seem strange to mention the furniture so prominently, but it is so important and gives so much of the key-note of the artist, who has collected and who works amongst it, that one can

sitters where you will, and provides at one and the same time a great variety of lighting without the moving of a blind or curtain. Each of the north-facing sides of the roofs is entirely filled with ground-glass, and each of the south-facing slopes has two large windows. There are, it is true, two or three plain backgrounds on a moveable stand, but they are so seldom used that they might almost be dispensed with. Each side of the studio itself, each corner—and there are many charming corners amongst the massive woodwork—provides one or more natural settings for a portrait. Besides the old spinet and the spinning-wheel, there are numerous old and handsome chairs, tables with quaintly-turned and carved legs, and with histories (for the newest of them) going at least as far back as the days of Prince Charlie. A very handsome stairway that leads to nowhere, is from the dismantling of some historic hall; the magnificent fire-places (of which there are several) have each

been the hearth of some old Scottish family; and the wainscoting, the panelling, the two or three richly-carved doors (ornately magnificent, though they may only lead to a mounting room or the printing studio) have been gathered at various times from the breaking-up of some old residence.

In the midst of these treasures Mr. Crooke is thoroughly at home and thoroughly happy, two conditions necessary to the production of good original work. To a stranger, even, of refined and educated taste, the general air of such a studio has a calming and satisfying effect, so that worries and cares must need be forgotten, and any nervousness there may have been about sitting for a portrait must at once be dispelled in the atmosphere of artistic harmony. Of such an effect Mr. Crooke takes full advantage. Chatting of one of the grand mantels he will invite the sitter to a

observant, keen to note a suitable pose, and anxious to find the subject that awakens an expression of real interest. These found, it is but a moment's work to bring up the camera, a touch or two of the curtains, and before there is time for the awakened interest to die, the exposure is made.

Summing up his experience and practice in a few words, Mr. Crooke says:—"My best results are from the arrangements I observe, and not those which I create."

Perhaps some reader may ask, "what lenses and plates does Mr. Crooke use?" Well, really, we do not know, and surely in such work the mere tools and materials sink into insignificance. In printing methods we know that Mr. Crooke has a strong preference for carbon, and especially for a somewhat bright brown, which well suits the



STUDIO OF WM. CROOKE.

chair by the hearth, then, quietly talking, and noiselessly walking about as if bent on some entirely different object, he studies the pose that has been naturally taken. Perhaps he hands the sitter a book of rare old prints, or brings from one of the old enamelled and painted cabinets a valuable piece of china or old glass ware. Perhaps he moves up a little table that the visitor (no longer feeling like a "sitter") may enjoy the great mass of flowers in a handsome vase. If none of these changes give an exactly satisfactory result, attention may be directed to an ancient terrestrial globe, such as might be imagined in use in a Continental university, or to some other of the treasures of the place. Each change gives a new pose, and a different condition of lighting and surroundings. While Mr. Crooke talks as a virtuoso, pleased to meet with one who is interested in his beloved curios, or as a host interested in his guest's views on current topics, he is really the artist, acutely

general qualities of his work. In the reproduction of his pictures in the next two issues, this brown will be closely imitated; and the numerous illustrations drawn from the every-day work of the studio and not from exhibition pictures, will show a phase of Mr. Crooke's art unknown to photographers generally. To those who are striving for a high ideal in portraiture the work should prove an inspiration.

• • •

Photographic Snowballs will provide pleasure and profit to many of our friends. Particulars next issue.

"**The Photographic Worker**," a pamphlet of twenty-four pages and cover, issued by John A. Randall, 42 Tonsley-hill, East-hill, Wandsworth, S.W., is a comprehensive indictment of the unfeeling photographic employer, and an appeal to photographic assistants to combine for their mutual benefit. As a remedy for the existing state of things, Mr. Randall suggests trade unionism and co-operation.

Facts about Lenses.

Being a Chapter from "Early Work in Photography."

(Concluded.)

THIS form of lens has two main defects—its pictures suffer from spherical and chromatic aberration, the nature of which we will attempt to explain, first taking chromatic aberration.

If all the rays were of one color, and therefore equally refrangible (*i.e.*, equally capable of being bent) this simple lens would answer many purposes, but we know when a thin beam of light is passed through a prism the rays are divided according to their refrangibility, and instead of getting a spot of light where the rays from the prism fall, we get a long vari-colored strip of light—a spectrum. The same thing occurs with the lens, for all light is composite in its character, and its violet rays, which are more refrangible than the yellow, will be focussed, and will give a sharp image at a point nearer the lens. As the violet light rays which are dark to the eye are those which are most active photographically, while the yellow light rays (brightest to the eye) are least active, we find that we have here two foci (explained later), one called the visual, and the other the chemical or actinic focus. If we place our ground glass screen (or later our sensitive plate) at the point where the visual image is strongest and sharpest, we shall find on developing the photographic image, that it is feeble and blurred. If we move the screen (and plate) forward until the visual image is somewhat blurred, we shall find that the photographic image, on development, is better defined. This class of truly single lens is sometimes used by photographers of the impressionist school, and they find it necessary, after focussing their image on the screen, to rack in the camera back to an extent ascertained by experiment.

Spherical aberration is rather more difficult to explain. In the last diagram we shewed all the

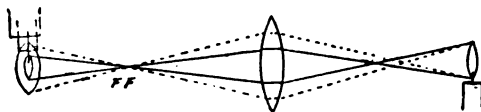


FIG. 16.

rays from (say) the tip of candle-flame, coming to one point on the ground-glass, whether they passed through the centre or the margin of the lens. But this diagram was falsely drawn, merely to illustrate a point in passing; and what actually happens would be better represented by the above diagram, which is, however, grossly exaggerated. It will be seen that the rays passing through the centre of the lens pass through or focus at the point F , while those passing through the edges of the lens focus at F' , with the result that the images formed by the two sets of rays do not coincide; and, as every point in the lens gives a slightly different focus, we obtain on the ground-glass an infinite number of images, just as we did with a large pin-hole in

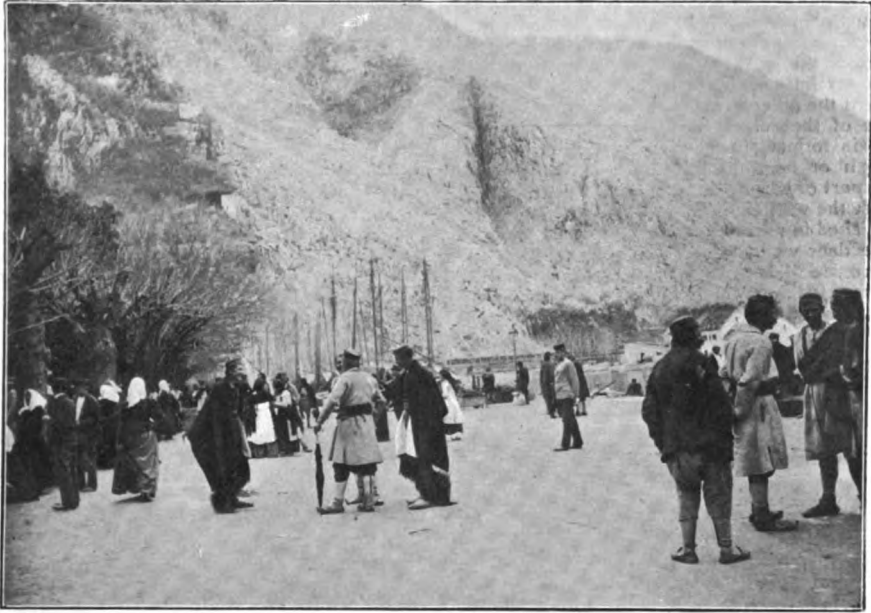
fig. 12. The exaggeration in the diagram consists mainly in the enormous size of the lens, as compared with the size and distance of the objects. In actual work the lens would, as a rule, be much smaller (relatively). It will at once occur to the reader that by covering up the outer rim of the lens, and allowing only the centre to act, we shall have a greater sharpness of the image, just as we did when the pin-hole was small. But this image will not be so strongly illuminated.

Fortunately, both chromatic and spherical aberration can be largely prevented by comparatively simple means. If, instead of using one single lens ground from one piece of glass, we make it of two pieces of glass, which differ suitably in their refraction of the violet and yellow rays, we can make the two sets of rays focus at approximately the same point. In the same way, while the form of lens we have illustrated makes the marginal rays focus nearer than the central or axial rays, a different construction would cause the axial rays to focus nearer than marginal. By combining two glasses, possessing the opposite properties in the right proportions, one will correct the other to a practically sufficient extent; and with this lens of two glasses we obtain what we desire, *viz.*, a sharp distinct image, using all the rays that can pass through a comparatively large hole. In other words we are able, with a comparatively short exposure, to obtain an image free from chromatic and spherical aberration.

This form of lens, made from two glasses (usually a crown and a flint glass) is commonly spoken of as a "single" lens, and is also called an achromatic, or a landscape lens,—achromatic, because its chromatism (or chromatic aberration) is cured; landscape, because of its ordinary use. Even with such a lens the correction of the defects mentioned is relative, and not absolute; so we introduce a "stop" or "diaphragm" to cut off some of the rays, and use only a portion of the centre of the lens for the central rays, while the marginal rays can only pass through the margin of the lens. Thus we make a compromise, sacrificing something of our light (and rapidity of exposure) for extra sharpness of image. And as circumstances vary, so that at one time sharpness of image, and at another time shortness of exposure is the more important, the lens-makers provide a series of "stops," so that the photographer may use a large or a small one, as circumstances require.

This form of lens is exceedingly useful for all ordinary landscape work, groups, and portraits, but it has certain defects which become very apparent when we use it for copying plans, or for photographing buildings and other objects, in which there are straight lines near the edge of the picture.

Curvilinear distortion is the chief difficulty in this direction, and though it is rather difficult to explain, we may be able to make it fairly clear by



ON THE QUAY, CATTARO, DALMATIA.

By John Bushby.



BELOW THE FALLS OF PLIVA ; RIVER VIBAS, BOSNIA.

By John Bushby.

an exaggerated example. We may say that the defect is introduced by the stop or small aperture that we provided to remedy the aberration just mentioned. This stop cuts off the rays proceeding from the corners of the house to the centre of the lens, so that the image of corners and outer lines is formed entirely by rays passing through the outer portions of the lens, while the image of the central part (say, the top of the door) is formed almost entirely by rays passing through or near the centre of the lens. The outer part of lens deflects the rays most strongly, so that the width and height of the house become diminished in proportion to the width and height of the door which is near the centre; while the corners are deflected more strongly than the centres of the walls, because they are more distant from the lens centre.

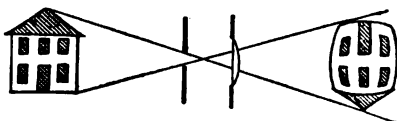


FIG. 17.

Curvature of field is another difficulty with lenses. In our diagrams of the candle-flame we have represented the image as coming to a focus on a plane surface, as a flat ground-glass screen. As a matter of fact this does not happen, but the image comes to a focus on a curved field. The line CC represents such a curved field, and it will be at once seen that if the plate (or ground-glass) is placed at A, the central part of the object will be sharp, while the top and bottom of the candle-flame will be out of focus. If the screen is placed at B, the top and bottom of the image will be sharp, while the centre will be out of focus. The best effect is obtained by placing the plate between these two points.

Fortunately, as in the case of aberration, this distortion and curvature of field can be largely overcome. While a single lens with the stop in front of it gives barrel-shaped distortion, the same lens turned round, with the stop behind it, will give the reverse, or pin-cushion distortion, thus:—



FIG. 19.

and by combining two such lenses, and placing the stop between them, we form a "rectilinear" or "doublet" lens, which gives straight lines right to the margin of the picture. In the same way, while a single lens of given construction gives us curvature of field in one direction, concave towards the lens, the same lens turned round will give a curvature of field convex towards itself. Thus the rectilinear or doublet form largely obviated two distinct defects of the single lens. Here, as in all problems of practical optics, the result is relative, rather than absolute, for we almost

invariably find that in gaining a given advantage we have to put up with a corresponding disadvantage; so that the whole science of lens-making is a series of compromises.

The single lens and the doublet, which is also called the rectilinear or the symmetrical, are the two main types of which all photographic lenses may be said to be modifications. As the rectilinear lens consists of two single lenses, mounted at opposite ends of a tube, it is possible to screw out one of the singles and use the other. In this case the single lens is about double the focal length of the doublet of which it forms a part, so that the rectilinear can be used for two distinctly different purposes. If the front combination is used, it will have a slight tendency to "pin-cushion" distortion, while the back will give slight distortion of the "barrel" type.

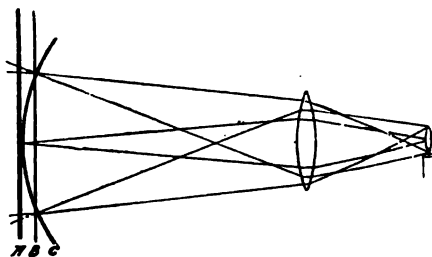


FIG. 18.

There is little more to say of the general construction of the lens, until we come to a more advanced hand-book than this, but there are one or two points in working that must be made clear.

First is the question of focus and focal length. We saw, with the pin-hole, that the image was, to all intents and purposes, equally sharp, whether the ground-glass was three inches or six inches distant. In this case the rays of light from the object passed through a hole so small as to be practically a point. With the lens it is different, as we have seen; for, in order to get the image sharp, we must place the ground-glass at the point where the rays from the centre and from the sides of the lens meet, or focus (see fig. 17). The distance between the centre of the plate, and the centre of the lens when in this position, is called the focus, or the focal length of the lens. Though this is not a scientifically correct statement, it is near enough for practical purposes, and is what is commonly used. It is not quite so easy to measure the focal length of a doublet as of a single lens, though for practical purposes it may be obtained by focussing on some distant object, and measuring the distance from the diaphragm aperture to the ground-glass. Opticians do it in a different way, and speak of the equivalent focus. This means the focal length that is equal to that of a single lens giving an image of the same size as is given by the doublet.

We have seen that, with a pin-hole, the distance between pin-hole and screen greatly affects the brilliancy of the image (pp. 50-51). In the same way with the lens. If we have a lens of (say) one inch diameter, throwing an image on a screen eight inches distant, the image will be just four times as brilliant as it would be if thrown

on a screen sixteen inches distant. And as the brilliancy of the image directly affects the length of exposure necessary to the plate, the relative size of the lens-opening to its focal length becomes an important factor in calculating exposure. It is, therefore, very necessary to know the size of our "stops" or diaphragms, relative to focal length, and, in order to express this, we measure both. Dividing the focal length of the lens by the diameter of the opening of the stop, we place the result as denominator of a fraction, with f as numerator. Thus a one-inch stop in an eight-inch focus lens is $f/8$, while the same stop in sixteen-inch focus lens would be $f/16$. As, using a one-inch stop, the image at sixteen inches distance is only one-fourth the brilliancy of that at eight inches distance, it requires four times the exposure; but stops marked with the same focal value require a similar exposure. Or, in other words, the exposure in each case is proportional to the square of the f number. For convenience, the lens-makers mark the f numbers on the stops,

angle, short-focus, etc., are relative, not absolute; and depend upon the focus of the lens in relation to the plate it is covering. The ordinary rectilinear lens has usually a focal length about equal to the diagonal of the plate it is intended to cover; and a lens of focal length appreciably longer than the diagonal of the plate, is called a long-focus or narrow-angle lens, for the two terms are interchangeable.

From this it might seem that long-focus or short-focus lenses can be used indifferently and interchangeably, but this notion has its limits. While it is true that any nine-inch focus lens covering a 12×10 plate is a wide-angle, it is also true that many nine-inch focus lenses will not sharply cover a plate of that size. A rapid rectilinear is usually constructed to work with a stop as large as $f/8$; while the wide-angle usually has its largest stop $f/11.3$ or $f/16$. Although a wide-angle lens will always cover a smaller plate than that for which it is intended, a narrow-angle will not always cover a plate much larger than that

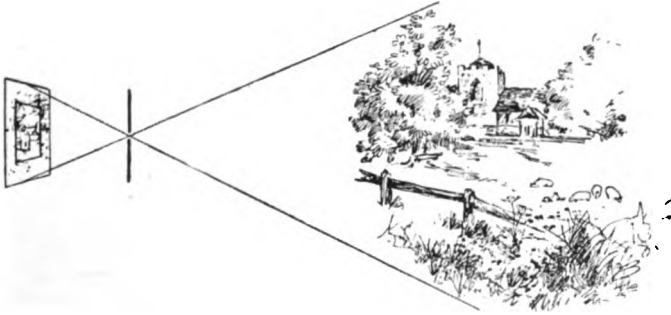


FIG. 20.

and usually arrange them so that each stop requires half the exposure of the next one smaller, or double the exposure of the next larger. They usually run $f/8, f/11.3, f/16, f/22$, etc.

It may be asked whether with a single lens working at $f/8$ we require the same length of exposure as with a doublet working at $f/8$. Theoretically, there would be differences; and there are other refinements of the f -value question, into which it would be unwise to enter here. The broad rule that the exposure must always be proportional to the square of the f number is perfectly safe in practical working.

Wide Angle and Narrow Angle.—As a matter of fact all lenses are both wide-angle and narrow angle, as well as being both long and short focus at the same time. We state this apparent paradox because it is very necessary that the student should fully understand the matter, if he is to be the master, and not the slave of his instruments. Suppose we have here a lens of nine inches focus, throwing an image upon a half-plate ($6\frac{1}{2} \times 4\frac{1}{2}$ inches). We should call it a medium-angle lens. If, however, we are only using it for a quarter-plate ($4\frac{1}{2} \times 3\frac{1}{2}$ inches), we should call it a narrow-angle lens; while, if we used it for a plate twelve inches by ten, it would be a wide-angle. On the quarter-plate it would be a long-focus, while on the twelve by ten it would be a short-focus lens. The terms wide-

angle for which it is made. And, although the wide-angle can always be used as a medium or narrow-angle on a plate smaller than that for which it is intended, it will not allow of such extremely rapid exposures as could be made with a medium, or narrow-angle lens.

All other things being equal, it is better to employ a medium-angle than a wide-angle lens; because, with the latter, the images of things near the edge of the ground-glass (or sensitive plate) are in a strained or distorted perspective, for the reason explained in figs. 8 and 9. If it is necessary to have the image of a good size, and impossible to get far away from the subject; it is often absolutely necessary to use a very wide-angle lens.

The instructions in this chapter, if once fully grasped, will give a fair working knowledge of the properties of the lens. Many more advanced points will be treated in succeeding articles.



"Bristol."—An envelope open, and without contents, was delivered to us by the Post Office on August 25th. The only clue we have as to the sender is the postmark "Bristol." The envelope had been closed and the flap was torn when delivered. Possibly this may meet the eye of the sender.

Studio Rock-Work.

BY GEORGE GILLINGWATER.

(Honorable mention in our recent prize competition.)

BECAUSE the so-called "dull," or "slack" season is upon us there is no reason to be idle, and if the following instructions be put into practice, whether you are amateur or professional, a portion of the time at least may be made both busy and profitable.

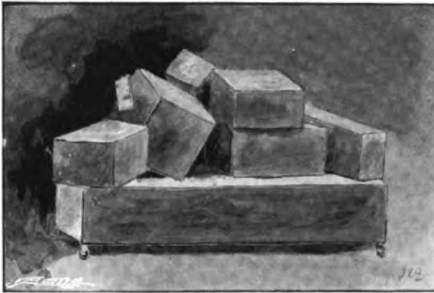
How small the outlay required will be seen, when it is known that beyond a pound or so of paint, and a bag of plaster of Paris,* little more is wanted than a few old boxes of different sizes, and some pieces of rag or thin canvas.

That a realistic piece of rock-work is a most valuable adjunct to either a private or business

bulky, and nail them together with the lids or open sides all one way, and to use an "Americanism," "just anyhow," not squarely one above the other.

Then nail on some rough pieces of wood, all sizes and shapes, even bunched-up newspapers will do, and as many old, large nails with big heads as you can find, placing them in all positions as before, "just anyhow," to make the surface as rough as possible.

Now find your pieces of rag or canvas and place them handy, and mix your plaster of Paris with water to about the consistency of a heavy oil, and keep it stirred up. Place a few of your rags in



studio, goes without saying, and it is especially useful to the amateur, because it makes such a splendid change from the conventional chair or table.

Now you must choose before starting whether you transform your boxes into separate pieces of rock or one solid mass.

Of course, the separate pieces lend themselves to an immense variety of combinations, but the drawback is that the plaster of Paris is liable to get chipped; not that that matters in practice, but they do not look so nice when broken.

Let us suppose, however, that you decide to make it in one piece—choose your boxes, not too

this, so that they are thoroughly soaked, then put them over the boxes, etc., puckering them with your fingers to increase the rugged appearance, or smoothing them out as you deem fit. Should there be any point likely to come away use a small tack, a splash of plaster will cover the heads.

You will now find that they retain the form given to them. Should the surface not please you, or the marks of the canvas, etc., show through, splash on, before quite dry, with a soft long-haired brush, some more plaster, or lay it on as you please, then leave to thoroughly dry.

A more novel effect may be obtained by bunching the canvasses in such a way that they form pockets in which a small pot fern may be placed, or a piece of moss may be fixed. Seaweed can also be

* Keen's cement will not set so quickly. A little size or sugar added to plaster of Paris retards the setting.

used, sticking a few limpet or other suitable shells and even stones here and there; the plaster and turned-up edges of canvas will hold them. Or they may be put on after with the aid of a little thicker plaster.

The net effect will make a finishing touch, and can be done with white paint or a bright varnish when all is finished. A pool of water is made with a piece of old looking-glass placed so that it can easily catch the light. When thoroughly dry, obtain some † boiled linseed oil and lay it on with a soft brush all over.

It will now be ready to receive a coat of stone-color paint. A brush, not too hard, again being used; or you may paint or distemper it to represent any sort of rock you may think suitable, so as to make it somewhat of an ornament, as well as giving it photographic qualities. If you have used a large box or board for the bottom portion it will now be easy to mount it on four castors, so that it can be moved about with comfort. Be careful not to mount it too high, or your grass mat, if you use one with it, may not be sufficiently deep to cover the ground line.

† A coat or two of boiling linseed oil, when the plaster is dry, and covered with a thin coat of weak size tinged with red lead, will make a better surface to paint.

Now with regard to the sides not presented to the camera. Whether you have left the lids on or not, many of them at least will make useful cupboards in which you can place miscellaneous articles. What would be the most satisfactory thing to do, though, would be to utilise one side for the ferns, etc., and the other for seaweed.

I may as well point out that all the boxes need not be of wood, but cardboard, in fact anything that is light and suitable for a foundation for our artificial rock-work.

The accompanying illustrations will serve as a basis upon which to work, but if you should wish to carry it out it would be advisable to make the "water" moveable, so that you may place it either on one side or the other, bringing your grass mat up to form the bank on which to pose your subject. This, in nearly every case, will be necessary, or you will find difficulties in focussing. If the water "looking glass" comes out too flat and still, the retoucher can easily alter this.

In arranging the lights there is one thing to guard against, and that is to see that the roof of the studio or other object not to be contained in the picture is not reflected there, and do not forget that much depends on a suitable background.

Photo-Micrography for Beginners.

By JOHN MILLS, F.R.A.S.

THE object of this brief account of photo-micrography is, primarily, to encourage those readers who possess a microscope, however unpretentious it may be, to avail themselves of its use as an auxiliary in extending their acquaintance with the applications of photography. Success in this branch of applied science does not depend entirely upon the skill which one can command from the photographer's standpoint, and the beginner will, therefore, find it expedient to spare himself no pains in securing the best sections of animal and vegetable tissues which his opportunities afford, as subjects for experiment, and, while it is true that tolerably good work can be done with the simple appliances I shall describe, superior results can only be obtained by means of the best apparatus. But since this would involve a far greater outlay than ninety per cent. of amateur photographers can afford, I have undertaken to show how the work may be carried out with the aid of a microscope, costing only about five shillings, and a little camera made from cardboard, or, better still, a cigar box.

In fig. 1 is shown the complete apparatus exactly as used by myself, the camera (C) being constructed as described at page 192 in the August number of THE PHOTOGRAM. The adapter (A), consisting of a stout paper tube fitted into a circular opening at the front of the camera, is securely attached to the sliding tube (F) by neatly wrapping a long narrow slip of paper around the latter till it is just large enough to slide into the former. As the tube (F) carries the object-glass at one end and the eye-piece at the other—there being no fine adjustment in this

simple form of instrument—the focussing is effected by moving the tube nearer to, or farther from, the slide (S), the transparent section on which is illuminated only by light reflected from the mirror (M). The operation may be conducted either in the dark-room or in diffused daylight, but as there is no material advantage in using the dark-room, save that the source of light is constant, it is better to do the work in the daylight, always, of course, provided that the operator makes all his fittings perfectly light-tight. It will readily be seen that as the small amount of light reflected from the mirror (M) is all that is available, the exposure required will be of long duration.

A difficulty likely to be met with is that of color in the objects to be photographed, and on this account it may be found necessary to bleach such objects by long maceration in turpentine. Objects in which red and yellow or yellowish brown colors exist, transmit light very imperfectly and therefore come out black, while if blue is included in the colors, light will filter through and give a much too light representation of the parts so colored.

I must remind the would-be photo-micrographer, moreover, that the lenses of a microscope are not quite suited for photographic work, that is to say, the visual and chemical foci are not coincident. The lenses, which may be regarded as built up from a large number of prisms, refract the red and blue rays unequally, and the latter, being the more refrangible, will form an image a little nearer to the lens than that of the image of the visual rays, so that an image which is sharp

enough on the screen will be somewhat obscure in the resulting negative. This difference of focus will require some preliminary trials before it can be entirely subordinated, and, as it will vary in amount depending upon the microscope used, the objective must be pushed inwards, after the image appears to be sharply defined on the screen, to an extent which experiment has shown to be necessary. In the case of low-power and cheap instruments such as we are describing the discrepancy here referred to is at its maximum, but it is not by any means an insuperable difficulty.

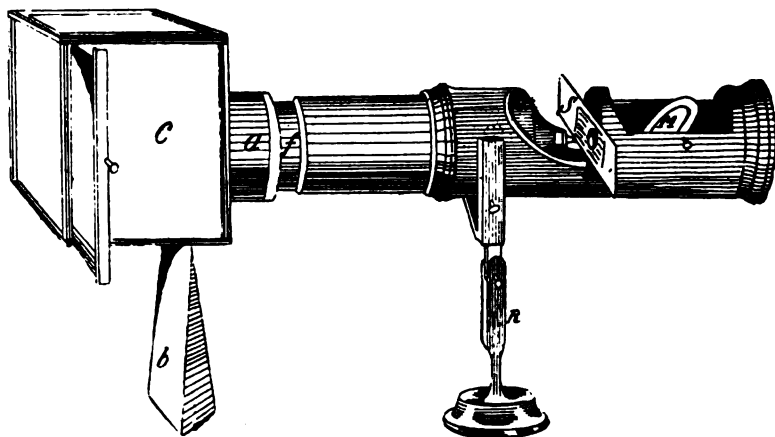


FIG. 1.

In fig. 2 a section of the human kidney, photographed with the apparatus here described, is shown, the so-called Malpighian bodies and the urinary tubules being plainly discernible. The



FIG. 2.

magnification is only about thirty diameters, but with a first-class microscope an enlargement of 300 diameters is easily attainable.

The time of exposure in the example here shown was two minutes. The amateur will soon find out for himself that it is a good plan to always allow a long exposure, because, medium plates being used, and the apparatus always directed towards

the north or away from the sun, the light which reaches the sensitised plate is so feeble, comparatively, that there is little fear of over exposure, while from a variety of causes exposures of short duration are risky.

Although the apparatus as here figured is disposed horizontally, the microscope being held by a wooden clamp (*R*), and the camera propped up by a block of wood (*B*), any other position would answer equally well. It might, if convenient to the operator, be held in a slanting position, or standing upright, but the horizontal arrangement is, perhaps, the best because of the greater

stability. This stability is one of the most important points in the work, for any tremor in the apparatus ruins the definition in the resulting negative, especially when high powers are used. The whole apparatus should stand on a substantial table on a substantial floor, on which, by the way, it is well not to walk about during exposure.

As it is expensive to purchase microscopic slides ready made, a few hints on how the operator may make his own specimens will probably come in useful here. The easiest plan is to start by cutting sections from the stem of some plant held between the thumb and forefingers of the left hand, while with the right a razor is drawn across the stem transversely. After the first cut, which divides the stem as nearly as possible at right angles to the axis, the object should be to slice off a number of sections as thin as is practicable, and of uniform thickness. The razor used for this purpose should be lubricated with water and alcohol, or glycerine, and the sections detached by means of mounted needles, and placed in a watch-glass containing oil of turpentine. Hardening of the specimen is frequently necessary before a section can be cut, and the required rigidity is obtained by freezing or by steeping the specimen in methylated spirits. An ordinary smoothing plane, such as is used by joiners, will produce very good sections of some kinds of wood. Deal, for example, may be cut in exceedingly thin ribbons in this way, and when mounted, after soaking in alcohol, constitutes an interesting and easily procurable subject for experiment.

Sections of specimens to be observed under the microscope, however, are generally prepared by the aid of a *microtome*. This is an instrument for slicing the material into very thin pieces of uniform

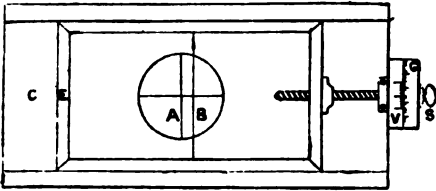


FIG. 3.

thickness, and it consists essentially of a holder for the specimen, and a rest for a razor. In the simple form of microtome, the razor is moved along the rest to cut the specimen, and the thickness of the slice is determined by turning a micrometer screw through a distance equal to the thickness required. The material may thus be raised above the rest to the extent of only the one-thousandth part of inch, or even less, and a slice is obtained of corresponding thickness. The accompanying fig. 3 explains the principle of the micrometer. C is a wooden frame with a hole in the centre, and a wire (A) stretched across; E, a frame, also of wood, with a wire (B) stretched across. E can be moved to and fro in the frame (C) by means of the thumb-screw (S), to which is attached a graduated disc (G), divided into 100

parts. The vernier (V) is divided into ten parts, so that each of the 100 divisions on the disc (G) is thus again divisible into ten parts, so that $\frac{1}{1000}$ th of a revolution can be measured.

Canada balsam is used for mounting sections, and it varies much in consistency, color, and the like. To be good it should be of a syrupy consistency, nearly colorless, and thoroughly transparent. It is best to keep it in a wide-mouthed, stoppered bottle, in order to avoid, as much as possible, its tendency to harden by contact with the air. If, in consequence of undue exposure, it has hardened, it may be thinned, after warming, by the addition of a little oil of turpentine. A drop of the balsam is to be taken from the bottle by means of a pointed glass rod, and transferred to the ordinary clean glass slide. By gently warming, the balsam will spread out into a thin homogeneous layer, over which the specimen is to be placed, and a second drop of balsam is then placed over it by means of the glass rod, when, on again warming, the upper and lower layers of balsam will flow together, so enclosing the specimen. The whole should then be secured by placing in the top the usual thin cover glass, which should be put on very carefully, slantwise, so as to exclude air bubbles. If there should happen to be any air bubbles remaining after the cover is put in position, they may be removed by placing the slide in a warm stove for an hour or two. When too much balsam has been used, the excess may be removed by scratching it off with a knife, and then cleaning the glass by means of a rag moistened with oil of turpentine or benzine.

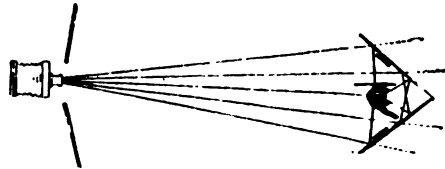
Duplicated Sitters.

THOUGH the methods here described are well known to most people, they are evidently new to many, since enquiries re photographic "doubles" and similar matters frequently reach us. The fact that the duplication of a sitter or sitters may be used with artistic effect, and become a power in the hands of the picture-maker by photography, was shown by the very fine example of the work of Mr. Moreno, given in our last issue.

Mirrors form one of the simplest methods of increasing the number of views of a sitter taken at one time, and a single mirror, arranged so that a full-face and side face of the sitter are presented in the same portrait, has often been used with admirable artistic effect. It is also used in our gaols, when photographing prisoners for identification. With two mirrors of large size, the number of effects obtainable is very great. By placing them face to face and the sitter between, reflection and re-reflection can be so arranged that the sitter in each of the mirrors appears as a series of copies of himself arranged in a row, side by side. Placing the mirrors so that their edges meet at an angle of 75° (see fig.), and letting the sitter face the angle, five different views of the same subject are obtained, all giving essentially different views of the face. In some of the American cities this class of picture has been made a specialty by one

or two photographers, with the result that considerable business has been done for awhile. This method has very distinct advantages as a style of portraiture, and gives great scope for ability in posing and lighting, so that we wonder it has never been taken up by a first-class photographer and developed to the full extent of which it is capable.

It will be seen from the diagram that the camera is arranged to point between two plain backgrounds on stretchers, or plain screens, to prevent



any part of the room near the camera coming into reflection. The example which we give was made for us by Wm. Gill, of Colchester, and is excellent in every respect, except that the mirrors at disposal were somewhat too small, wherefore the portraits are crowded.

The making of "doubles," whereby one is able to represent a man boxing with himself, wheeling

himself in a barrow, etc., is quite a different matter, but there are many simple ways in which it can be done, and, as our last month's example showed, the results need not be mere grotesques.

Any arrangement that will provide for the exposure of one-half the plate first and the other half later, can be used to produce "doubles." A simple method, and one which (we believe) has never been published, although it has been used for some time, is to fit the shutter of the dark-slide with a flexible extension in the form of a roller-blind. This is made adjustable, so that the distance between the end of the shutter and the

We need only describe one other method which has the advantage that it can be worked with a cheap camera without reversing back, whereas a reversing back is necessary in the other cases. This can only be satisfactorily used for doubles, and not for three or more exposures. The apparatus needed is a little piece of blackened tin or thin copper, cut to fit inside the lens hood, and then rather less than half of it turned up to form a sort of handle and to allow the light to pass. The disc should cover more than half the lens, and for one exposure will be placed to cover the right-hand side, while for the other it covers the left.



A QUINTUPLICATED SITTER.

By William Gill.

front of the blind may be equal to half, one-third, one-quarter, or less of the length of the plate. If set for a quarter, the first exposure is made by pulling out the shutter a quarter of its length. By pulling it forward another quarter, a fresh surface of plate is uncovered, while that which has been exposed is covered by the blind. An important point is to have the shutter marked so that the quarter, half-way, etc., distances may be accurately seen, which will prevent any necessity of taking the dark-slide out of the camera during a series of exposures.

Mr. Moreno's method, which was described in our last issue, is illustrated by the third diagram. To use this it is necessary to close the dark-slide and open the camera between exposures, so that the card covering may be turned down from the portion of the plate to be exposed. The little diagram is arranged for the second exposure in a series of five.

On a pinch this may be made of cardboard, or it may be in the form of a lens cap to go over the hood instead of a disc to go inside.*

In all these cases, especially with three or more exposures, it is necessary to have the ground-glass very carefully marked to show the successive portions to be exposed; or if the work is being extensively done, to have the background marked well above the sitters.

○ ○ ○

We congratulate J. E. Thornton, of the Thornton-Pickard Manufacturing Co., upon his wedding with Miss Heaton, of Southport, on Tuesday, the 25th of August. The wedding took place at the Baptist Tabernacle, Southport. The happy pair left the same afternoon to spend a portion of their honeymoon in Wharfedale, after which they will proceed to the Continent.

* There are on the market some good and simple camera-attachments for duplicating purposes. These have been noticed in our earlier issues.

Architectural Notes for Photographers.

By HAROLD BAKER.

Illustrated by OLIVER BAKER, R.E., A.R.C.A., etc.

Thirteenth Century or Early English.

THE architecture of the thirteenth century is chiefly distinguished by the grace and chaste beauty of its outlines, depending but little upon enrichments for its effect.

The chancel transepts of Westminster Abbey furnish a fine example, they are quite devoid of carved decoration, yet how fine is their general effect, especially when compared with the over elaboration and excessive ornamentation of Henry VII.'s Chapel within the same building.

The acutely-pointed arches shown in the illustration (fig. 26) are very typical of this period,

cases, of brass, and are not merely ornamental; as the smaller shafts are often of Purbeck marble, which was only obtainable in comparatively short lengths, the annulets were necessary to



FIG. 26.—WESTMINSTER ABBEY.

a remarkable change from the semi-circular Norman arch. This acutely-pointed arch is usually called a "lancet," to distinguish it from the "equilateral" which was generally used during the fourteenth and fifteenth centuries. But the shape of the arch varied so much even during the same period, that it is unsafe to accept it as a certain guide to the date of a building. The shape of the arch was altered with the necessities of material or position.

At Westminster, it will be noticed that the large circular columns are surrounded by small shafts, in some cases almost hiding the large central one. They have two series of bands or "annulets" binding them to the central column. Those at Westminster are, in some

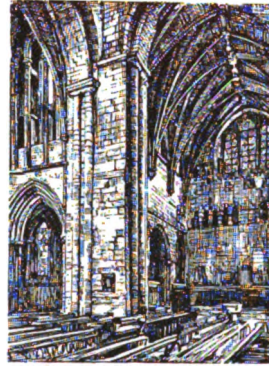


FIG. 27.—PERSHORE.

secure them. Photographers who attended the Convention, at Leeds, had an opportunity of seeing the ruins at Fountain's Abbey, and in the "nine altars" (an extension of the choir) would find the remains of a remarkably fine example of this period. The polygonal columns show the remains of the annulets and the capitals of the small shafts, but the shafts themselves have nearly all disappeared. Above the capitals the shafts radiated into ribs, covering the groins of the stone vault. Between two of the columns (fig. 26) a glimpse can be seen of the triforium and clerestory.

Westminster Abbey is generally admitted to be one of the grandest examples of the architecture of the thirteenth century; but some place Salisbury Cathedral first.

The chancel of Pershore Abbey, dedicated in 1239, is another fine example of this period; the pillars are not so lofty as at Westminster, there are no annulets, and the shafts quite conceal the central column. The capitals are carved with the peculiar conventional foliage, illustrated at fig. 28, which is characteristic of the style. From the capitals spring beautifully moulded arches, the rich effect being produced by a combination of bold "hollows" and deep "rounds." Between the arches, from a carved corbel, a triple shaft projects from the wall and runs up between the triforium arches, and terminates in a carved capital from which begin the springers of a beautiful stone-vaulted ceiling. The triforium and clerestory are combined on one tier, by having, within, a tall triple arch with detached shafts and a passage at the base, and externally a window of one arch.

The short round-headed window of the Norman period was succeeded by a tall narrow one with

an acutely-pointed arch. These were often grouped together in twos or threes, and occasionally more—one of the finest being the great window in the north transept of York Minster, called the "Five Sisters."

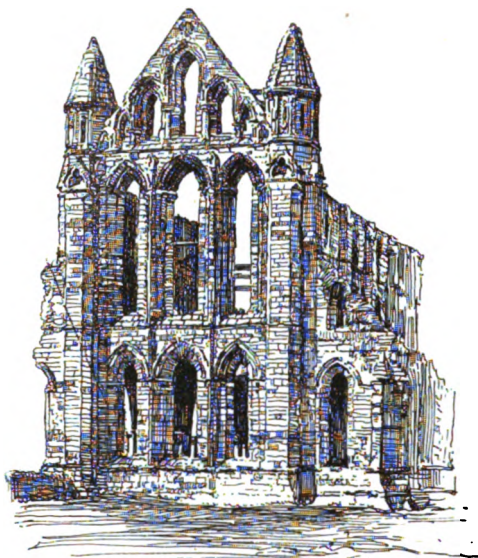


FIG. 28.—WHITBY ABBEY.

The east front of Whitby Abbey (fig. 28), of simple lancet windows, grouped and adapted to each other, forms, even in its ruinous state, one of the finest pieces of proportion and design in the world. A smaller example of such a group is seen through the centre arch in fig. 27—Perschore. When two lancet windows were placed side by side and enclosed under a projecting "dripstone" moulding, the space between the heads of the windows was often pierced with a circle or "quatre-foil," and formed the germ of the very beautiful "tracery" windows, which attained the highest development of beauty and grace in the succeeding period.

One of the chief characteristics of this period, and which is generally identified with thirteenth century work is the moulding known as "dog-tooth," shown in detail at the bottom right-hand corner of fig. 29—Bolton Priory. It is used upon all the arches of the west front of the Priory Church at Bolton, and very lavishly at Beverley

Minster. It was probably a development of the Norman chevron.

The broad, shallow buttresses of the Norman

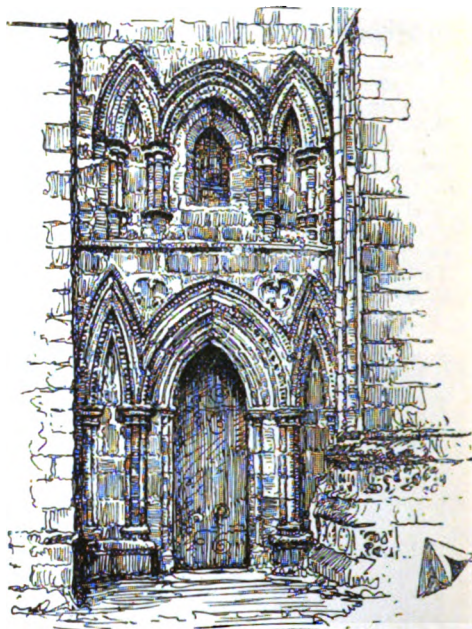


FIG. 29.—BOLTON PRIORY.

period now gave place to narrow buttresses of much greater projection from the wall, diminishing in stages towards the top. "Flying buttresses" (consisting of a light bridge or arch of stone thrown over the roof of the aisles from the top of the ordinary buttress to the wall of the nave or chancel) were introduced in order to counteract the outward thrust of stone vaulted roofs, which now became more common. But these buttresses were not largely used in this country.

The pyramidal tower roofs of the twelfth century were rapidly developed into graceful spires, usually springing, without a parapet, from the outer walls of the tower, which was often bracketted out at the top. A good example of the "broach" spire, as it is called, will be found at St. Mary's, Newark, and in the central tower of Oxford Cathedral.

(To be continued.)

The Death of Dr. P. E. Liesegang, of Dusseldorf, removes a photographer of world-wide reputation and great ability. His death occurred at his home on Sept. 6th. and Dr. Liesegang was in his fifty-ninth year. Through his books, and through his manufactures, both of which obtained world-wide reputation, Dr. Liesegang was known to every photographer, while to those who frequent the Photographic Convention he was well-known personally. With his son he attended the Photographic Convention

in Edinburgh in 1892, and he was also at Dublin in 1893, and Shrewsbury last year. His thorough enjoyment of this British trip was of a simple genuine sort, though his shy and retiring disposition probably caused him to be almost unknown, even to many of those who attended the Convention. He always specially enjoyed one or two days after the Convention, when either with his son only, or with one or two kindred spirits, he could get away to some beauty spot in the Convention district.

Exhibitions and Competitions.

These particulars are given when the Exhibition is first announced, and again when it is time for entries to close. The Secretaries' names are only given when the Exhibitions are open to receive work.

Name of Exhibition.	DATES.			Prizes.	Open Classes.	Address of Secretary.
	Entries.	Pictures.	Exhibition.			
1. Southport Social Photographic Club			Oct. 26 to 31.	None.	All.	1 Creed-lane, E.C.
2. A. P. Competitions		Sept. 26. Oct. 24.				
3. Lewisham Camera Club			Sept. 28-29. Sept. 28 to Nov. 12.	B.	Members only. Open.	192 New Cross-road, S.E. 12 Hanover-square, W.
4. Royal Photographic Society			Sept. 24 to Nov. 7.	None.	No Classes.	Dudley Gallery, Egyptian Hall, Piccadilly.
5. Photographic Salon						
6. Leicester & Leicestershire Photographic Society			Nov. 24 to 26			68 Church-gate, Leicester.
7. "Austin Edwards"		3rd of each month.		Frena Hand-Camera.		Austin Edwards, Willoughby-lane, Park, Tottenham.
8. Oregon Camera Club		Sept. 26.	Oct. 3 to 10.	Cash and Apparatus	Members only.	Portland, Oregon.
9. Magic Lantern Journal Slide Competition	Oct. 31.			Cash.	All.	9 Carthusian-street, E.C.
10. Hearth and Home		Oct. 8. Nov. 12.		Cash.	A.	6 Fetter-lane, E.C.
11. Brixton & Clapham Camera Club		Oct. 2.	Oct. 6 to 10 Dec. 3-4	S. B. S.B.C.	Two. Members only.	1 Gauden-road, Clapham, S.W. 2 Tilney-street, Orrell-park, Aintree, Liverpool.
12. Aintree Photographic Society	Nov. 21.					

A—Amateur. P—Professional. G—Gold Medal. S—Silver Medal. B—Bronze Medal. C—Certificate.
Cm—Complimentary Medals given to every exhibitor whose work is hung.

Current Topics

Practical Radiography is well illustrated in a competition and exhibition, at the Animals' Institute, Kinnerton-street, Belgrave-square, London.

Photographer and Radiographist is the style and title of Jas. Dickinson, who has removed from Grainger-street to new premises in Neville-street and Pink-lane, Newcastle-on-Tyne.

Photographic Snowballs will be quite a "current topic" next month. Those who see our Annual will have a fortnight's start, but those who don't will find particulars in time for plenty of fun at "snowballing."

A Kinetoscope Fire is reported from Berlin. A defect in the electric lamp caused one of the heated carbons to fall upon the celluloid film, and the fire was not extinguished until the Exhibition Hall was entirely wrecked.

An Advertiser writes:—"Of course I want a half-page in 'Photograms of '96.'" He took similar space last year. Another says—"I had a quarter-page last time; please book me a half." Several who took half-pages last year now take whole ones. There is still just time for you.

A Dinner was given on Wednesday, September 2nd, to all the employees of Austin Edwards, "the film man." A capital repast was provided by the Holborn Restaurant, and after justice had been done to the provisions, the party adjourned to the Gaiety Theatre to spend the evening.

Telephotography.—In the "Phot. Archiv," of September, appears the first instalment of a paper, by Eugen Kiszelski, describing his method of electrically transmitting photograms to any distance over a single telegraph wire. On completion of this paper we will give our readers full information on the process; meanwhile we may mention that the essential point is the production by galvanoplastic of a metallic relief, corresponding to the lights and half-tones of the original negative, and the transmission of same by insertion in a sender, which allows electric current impulses to enter the telegraph line, which impulses are re-converted into optical images in the receiver at the other end.

A Colonial Firm, which last year sold one dozen copies of "Photograms of '95," says—"You may send us this year 144 copies, or if you can put our name as agents on the copies you send us, make the order 200." It is well to order early.

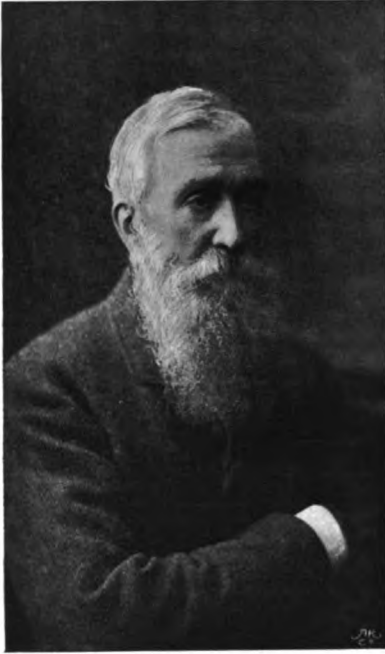
We regret to announce the death of J. H. Steward, optician, Strand, which took place on August 20th. Mr. Steward for some months had indifferent health, and was unable to attend business, but left the management entirely to his sons.

A Prominent Exhibitor says:—"Between ourselves, if I had my choice of having my picture accepted by the Pall Mall or Salon, or reproduced in *Photograms of the Year*, I would choose the latter. I consider that the book not only reaches a wider and more influential audience, but is also so much more permanent than the exhibitions. Another reason is that the book is a real help and inspiration to thousands who cannot visit London, and who greatly need the help."

Something for Nothing (revised version). Some of the publishers of popular almanacks have discovered a method of making good use of photographers. They offer to the best photographers in good districts, the great privilege of having their names placed in a list of photographers in all parts of the country who are prepared to give a cabinet portrait for nothing to any sitter presenting a coupon from the almanack. A number of circulars sent to leading photographers have been forwarded to us for examination and comment, but the only comment we can make is, that we do not see what equivalent advantage is given to "the leading photographer" in return for his undertaking to do an unlimited amount of work without any recompense.

Photographers heard with sincere regret, and also with considerable shock of surprise, of the death of William England, on August 13th. Although one of our oldest workers, Mr. England had always seemed so healthy and active that his death could not be expected by anyone who knew him personally. He was amongst the earliest workers in photography, as even in the early Daguerrotype days he was a successful photographer. In the fifties he produced a considerable series of American views, and also a fine series of views in Ireland, in each case making the first series ever offered for sale. At the great exhibition of 1862, the whole of the photography was in his hands, which is evident that even at that comparatively early date his reputation was a great one. Although a very retiring man his knowledge of photography was always at the service of others, and his

careful, judicious opinion was very greatly valued by foreign as well as by British workers. On the boards of judges of many of the leading exhibitions of the last twenty or thirty years his name was to be found, and the last case in which he acted in this capacity was at the Exhibition of Derby in the present year. He was elected a member of the Selection Committee for this year's Exhibition of the Royal Photographic Society, in which capacity, as well as in the capacity of a judge of that exhibition, he has frequently acted. At the International Exhibitions held in Paris, in 1878 and 1889, he was on the board of jurors, and in the latter year he was chosen foreman of the British Photographic Section, and



WM. ENGLAND.

Photogram by H. S. Mendessohn.

received the personal thanks of H.R.H. the Prince of Wales. Although Mr. England had won many medals and other exhibition honors, this particular recognition was the one which he most prized. At the same exhibition he received the French decoration "Officier de l'Academie." It is thirty-three years since Mr. England joined the Royal Photographic Society, and for nearly twenty years he was a member of its council. His death, which occurred in the street close to his home, was terribly sudden, and was attributed to heart failure.

Acetylene gas has been successfully used in several of the American hospitals as a photographic light, and is said to have very special advantages for oculists and throat and nose specialists. The *New York Tribune* says:—"Photograms taken at midnight or mid-day, by the new light, acetylene, show so marked an excellence that its scientific uses are apparent. Practical tests in two hospitals have proven acetylene light the best known for operations requiring surgeons to work inside the human body. Laparotomy, in its various modifications for appendicitis and peritonitis, is made easier for the expert knife by the acetylene glow, which shows each tissue in its proper tint, and is diffused evenly into every cranny of the anatomy. The acetylene hand torch will doubtless save many a life. Oculists and throat and nose specialists are the most difficult scientists to please with artificial light. They shut out the sunlight and use glaring electric lamps or poisonous gas jets, each of which throws off as much carbonic oxide as six patients. Now that they can use acetylene, gas and electricity may be dispensed with."



1. "Primus' Lanternist's Pocket Book." W. F. Butcher. Price, 1s.; post free, 1s. 1d. W. Butcher & Son, Blackheath.
2. "Photo-Engraving Made Easy." John Lemane. Price, 1s.; post free, 1s. 1d. Harrington & Co., 66 King-street, Sydney.
3. *Magic Lantern Journal Almanac.* J. Hay Taylor. Price, 1s.; post free, 1s. 3d. Cloth, 1s. 6d.; post free 1s. 10d. London: 9 Carthusian-street.
4. "Artistic Landscape Photography." By A. H. Wall. Price, 2s. 6d.; post free, 2s. 9d. London: Percy Lund and Co., Ltd.
5. "Optique Photographique." By Ad. Miethe, Dr. Sc. Published by Gauthier Villars et Fils, 55 Quai des Grands-Augustins, Paris.
6. "Album de la deuxième Exposition D'Art Photographique; Association Belge de Photographie, 1896." Price 8s., post free, 8s. 10d. Emile Bruylant, 67 Rue de la Regence, à Bruxelles.

Our Half-Tones this month are by the Art Reproduction Co., Plough-court, Fetter-lane, E.C. Particulars of the firm and its history will be found in our "Process" section.

The General Press becomes more and more photographic, as witness the special photographic number of the *Illustrated Carpenter and Builder*, a number engineered by Fred J. Prouting.

That handy pocket companion, (1) "The Primus Lanternist's Pocket Book," is now ready for season 1896-97. It contains brief notes of the year's progress in lantern matters, a series of reference tables, and all the usual features of a pocket diary.

The Christmas Cards of Wilfred Emery are very attractive, and the terms on which they are offered are accommodating. They can either be supplied with prints from Mr. Emery's own stock negatives, with prints made from negatives supplied by customers, or without any prints at all. In Mr. Emery's own series are some very pretty landscapes, and the complete cards might well be stocked by those who cannot make their own.

Photo-Engraving Made Easy.—(2) Australian photographic journals have been known to us for some time, and what we believe is the first photographic handbook issued in the Australian Colony has just been published by Harrington & Co., under the title "Photo-Engraving Made Easy." It is a curious commentary on the present-day tendency of photography that this first handbook should deal with the photo-mechanical side. The brevity of the matter is commendable, but the work seems to cover all points that are necessary to the beginner in half-tone work.

The charming style of the catalogues received from good American houses always strikes us. A specially fine example of catalogue work is the list of the "Premo" camera and other apparatus, made by the Rochester Optical Co., and sold in England by O. Sichel & Co. Throughout the work of the different cameras is illustrated in half-tone, and, of course, the cameras themselves are fully represented and described. The novelty for the next season is to be the "Pony Premo," which has the advantage of folding into an unusually small compass, and forming a camera with case complete in one article, a style that has been popular of late with several American firms, though we believe that "Pony Premo" is the smallest of all.

The Magic Lantern Annual (3) is sure of a welcome at the present time. Edited by J. Hay Taylor, of *The Magic Lantern Journal*, it is not necessary for us to say that the matter is thoroughly practical, varied, and up-to-date. The contributed articles cover almost all phases of lantern work, and include some capital suggestions for home-made accessory apparatus, etc., etc. A section for describing and illustrating the principal new apparatus introduced during the year is included, together with a very complete list of Colonial importers who import from England, and British exporters who export to the Colonies. This section, though

of interest to the trade, is scarce likely to be of great attraction to ordinary readers, but entirely apart from this the Annual is first-rate value.

"Artistic Landscape Photography" (4), by A. H. Wall, is exactly the book we should have expected from a man so widely trained in art, so widely read, and so early steeped in photography. It is a book to read and assimilate, to be re-read for inspiration, and always to be taken up with the certainty of finding new help and suggestion. For it is the exact opposite of a book of formulae, it has a message exactly suited to the need and to the capacity of each particular reader, and what at one time proves unsuggestive, at another stage in artistic progress will be found to be fertile with ideas. It is a work from which one wishes to quote, but if quoting is once fairly begun, pages would be needed, so we must be content with one solitary paragraph, which practically gives the key-note. Mr. Wall says:—"True art work is not the producing of mere dumb, lifeless outer-seemings, imitations of hired models, studio accessories, and imperfect presentments of 'nature's soulful loveliness,' or those 'front elevations' of men and women which we call portraits, or those sunless, airless, uninspiring landscapes we wrongfully call pictures. These are all, whether photographs or paintings, mechanical productions." It would be good for photography if every camera-man could read and live up to Mr. Wall's teaching.

"Optique Photographique" (5), by Dr. Miethe, the well-known writer on scientific photography, is a book of nearly 140 pages, written, as its author declares, for the use of photographers and amateurs, and without a mass of puzzling mathematical calculations to bewilder the too often unscientific worker. The theory of light, the optical properties of glass, aberration, distortion, use of the diaphragm, and similar branches of the subject are clearly and carefully explained with as little use of technicalities as is possible in such a work. Diagrams and drawings help to make the author's meaning plain, and the amateur or professional who studies the book as it should be studied will have his eyes opened to much the average worker never sees, and the latter, therefore, often goes on from one failure to another simply through ignorance of some few scientific facts. Scientific works cannot always be practically used by unscientific readers, and when such a work is at the same time strictly accurate and clearly understandable by anyone who has made reasonable photographic progress, we should be grateful to the author. This volume is one of the series for which we are indebted to those enterprising publishers Messrs. Gauthier Villars & Son, of Paris, and comes to us in a French translation, by Messrs. A. Noaillou and V. Hassreider, from the original German. We desire to praise the care of these gentlemen in seeking to conform in every way to Dr. Miethe's intentions, and especially in their use of expressive and ordinary instead of always strictly scientific terms. The book should greatly aid photographers in gaining a fuller comprehension of important technical facts, and thereby materially facilitating their own advancement in photography by making clearer than ever before the use and importance of the tools with which they work.

The Album (6) of the second exhibition of the Association Belge de Photographie, is especially interesting to us as springing, in idea, from our own "Photograms of the Year." Even our characteristic light-grey cloth is exactly matched, and our sloping band, on the front cover, is followed, though not exactly. The size of the page is much larger than our own, and each reproduction is printed as a separate plate, without any letterpress save the title. Various colored inks are used, generally with good effect, and most of the reproductions are excellent, though one or two are distinct failures. Amongst the figure subjects is John E. Dumont's fine old monkish musician, entitled "The Solo"; a pretty girlish figure by Edwin Ganz; an excellent head of "A Cornish Fisherman," by W. M. Harrison; and several other good works. There are two studies of sheep, one of which, by A. de Penaranda, is exceedingly fine, though it would be improved by the loss of a portion of its sky. There are several well known and several new landscapes, including work by Alfred Werner, Charles Job, C. Smerdon Roe, Otto Scharf, George L. Wilms, and George Hankins. The most powerful picture in the series is "Christ au Tombeau," by L. Bover, of Brussels; a wonderful rendering of a subject which the present fashion in religion almost forbids us to touch, though in the none less earnest earlier days it was thought a most suitable subject for the artist's devotion. M. Bover has approached his task with reverence as well as skill, and has succeeded well in representing solemnly, but without ghastliness, the dead body of the Saviour of Men. The repose is complete, the choice and treatment of the model help us to realise that the Roman legionaries were only able to kill the body, and that the true and ever-

living Christ is not here. We count ourselves fortunate in having received permission to reproduce this picture in our Annual.

The Pennines Postal Photographic Club is open to receive one or two members. Hon sec: Alfred Champness, Sedburgh, Yorkshire.

"Invention" has just changed hands and will in future be edited by Perry F. Nursey, a man whose experience ought to ensure its increasing success.

The Ruled Screen in Photography.—The use of a ruled half-tone screen for softening the detail in portrait prints was recommended some years ago in this country, and if we remember rightly, copies of screens on celluloid were offered for sale for the purpose. The idea was that the celluloid cross-ruled screen should be placed between the ordinary photographic negative and the printing paper. A decided improvement on this is now suggested by Chas. B. Hall, who is the maker of irregular-grain screens, and who sends us an excellent portrait of himself taken through one of these screens. The portrait is a large 10 x 8 head, and is very effective in every way.

About Patents.

182. *Kinetoscopes and Magic Lanterns*, relates to means for projecting kinetoscopic pictures on a screen. C. Wray, Finsbury-drive, Bolton, Bradford, Yorks. January 3rd, 1895.

218. *A Combined Camera*, change box, and shutter, with mechanism for changing the plates, setting and releasing the shutter by a single reciprocation of an opening device. C. W. Forward, 32 Grove-road, Brixton, Surrey, and C. E. Cole, 10 Elm-road, Camden Town, Middlesex. January 3rd, 1895.

613. *Sanderson's Camera Front*. Placed on the market by Geo. Houghton and Son, and mentioned and illustrated in our issue of September, 1895, p. 219. F. H. Sanderson, 48 Bridges-treet, Cambridge. January 10th, 1895.

729. *Stands* (for photograms, cards, etc.) T. E. Alexander, 7 River-front, Enfield, Middlesex. January 11th, 1895.

1,075. *Photographic Printing Machine*. W. Friese Greene, 39 King's-road, Chelsea. January 16th, 1895.

1,275. *Frames for Photograms*, etc. G. W. Mohrstadt, 44 Bradford-street, Birmingham. January 19th, 1895.

1,287. *Magic Lanterns*. J. H. Barton and J. Stuart, 111 New Bond-street, W. January 19th, 1895.

1,509. *Plate-Changing Apparatus*. B. J. B. Mills, 23 Southampton-buildings, W. January 22nd, 1895.

1,700. *Envelope for Photograms*. T. W. Renny, 24 Pow-street, Workington. January 24th, 1895.

1,924. *Roller Blind Shutter*, with extra safety blind. J. E. Thornton and E. Pickard, Altrincham, near Manchester. January 28th, 1895.

1,950. *Developing Box*, with ruby glass lid and base. E. Edwards, 65 Chancery-lane, Middlesex. January 28th, 1895.

2,118. *Stereoscopes*. E. de Pass, 78 Fleet-street, E.C. January 30th, 1895.

2,305. *Ives' Stereo Photochromoscope*. F. E. Ives, 2750 North Eleventh-street, Philadelphia, U.S.A. February 1st, 1895.

2,333. *Adamson's Incandescent Lamp*. Improvements in method of suspension, etc. A. G. Adamson, 136 Buchanan-street, Glasgow. February 2nd, 1895.

2,437. *Acetylene Lamps*. D. B. Morison, Hartlepool Engine Works, Hartlepool. February 5th, 1895.

2,544. *Pocket Camera with Roller Slide*. A. J. Boulton, 323 High Holborn, Middlesex. February 5th, 1895.

2,687. *Magic Lanterns and Polariscopes*. W. I. Chadwick, 2 St. Mary's-street, Manchester. February 7th, 1895.

2,715. *Magnesium Powder Lamp*. A. A. Archer, 195A High-street, Kensington, London. February 7th, 1895.

2,767. *Stereoscopic Adapter for the Tripod Head*. E. A. Ind, 8 Howard-street, Gloucester. February 8th, 1895.

3,303. *Focussing Device*. H. Von Elpous, 5, 11 Littnerstrasse, Berlin. March 13th, 1895.

5,730. *Acetylene Generating Plant*. H. H. Lake, 45 Southampton-buildings, Middlesex. March 19th, 1895.

5,919. *Plate-changing Arrangement*. C. J. B. Echassoux, 9 Rue des Guillemites, Paris. March 21st, 1895.

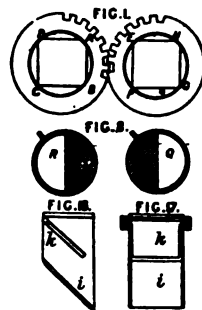
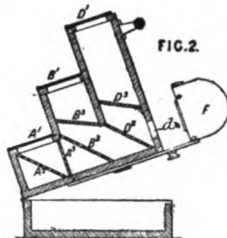
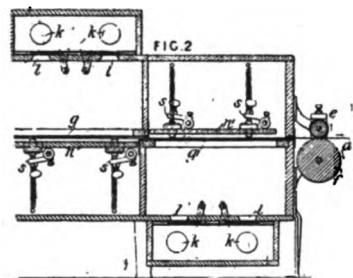
6,018. *Plate-changing Arrangement*. E. Underwood, 130 Granville-street, Birmingham. March 22nd, 1895.

6,150. *Focussing Arrangement*. F. Beresford, 14 Bridge-road West, Battersea, London. March 25th, 1895.

6,291. *Shutter*. E. H. Jaques, Elmhurst, Water Orton, Warwickshire. March 27th, 1895.
 6,342. *Hand-Camera*. L. J. R. Holst, 90 Damrak, Amsterdam. March 27th, 1895.
 6,555. *Roller-blind Shutter*. L. J. R. Holst, 259 Heeren-gracht, Amsterdam. March 30th, 1895.
 6,602. **Enamel Photographs*. F. Schachinger, 14 Neuhauserstrasse, Munich, Germany. March 30th, 1895.
 6,777. *Acetylene Generator*. E. Gearing, Penahurst, Clarence Drive, Harrogate. April 2nd, 1895.
 6,796. *Graphoscope*. A. Agüero, 67 West 100th-street, New York, U.S.A. April 2nd, 1895.
 6,901. *Multiple Printing Frame*. E. Seamen, Mint-street, Lincoln. April 14th, 1895.

printing and printed typographically, either before or after the photographic operation. A single machine for use with one negative may be made.

2,118. *Stereoscopes*, designed to allow a number of persons to simultaneously view stereoscopic views of any size, whether mounted or thrown upon a screen by a magic lantern, and whether placed as usual, or in the position in which they are photographed, or one above the other. Each person is provided with the device shown, or one of its modifications. In fig. 1, *A B C D, E F G H* are two prisms geared so as to turn together in opposite directions and in the given position, having their edges turned towards each other. By turning the prism round a position is obtained in which two flat images are seen with an image in stereo-



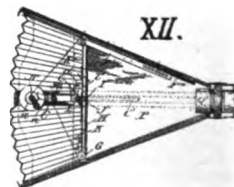
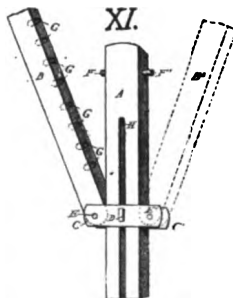
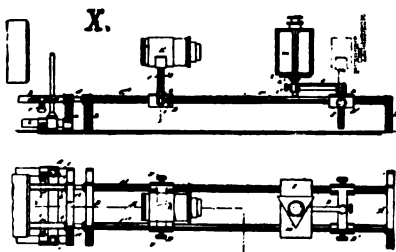
5,303. *Focussing Device*. A mirror hinged at the foot of the ground-glass and provided with hood, so that the image can be examined from above.

6,602. *Enamel Photographs*. Relates to a method of producing enamel photographs. An emulsion, consisting of chromate of potash or ammonia, or both, and ceramic black dissolved in a mixture of glue and gelatine, is coated on to a glass plate. After exposure, development with hot water, and treatment with sulphuric acid; the picture is painted with ceramic colors, and burnt into the glass in a furnace.

1,075. *Photographic Printing Machine*. Apparatus for producing prints wholly or partly by photography. A continuous band of sensitive paper *d*, *d* is drawn along intermittently by a feed roller *f*. While the band is stationary, prints are made from two negatives *g*, *g*¹ on opposite sides, the source of light being in each case a pair of incandescent lamps *k*, *k*. Before each printing the paper is pressed against the negative by two pressure boards *n*, *n*¹ acted upon by levers *S*, which are actuated simultaneously by a cam

scopic relief between. The useless images are stopped out by rotary diaphragms *R*, *Q*. When the views are one above the other, the relative positions of the prisms must be altered. A modification involving mirrors is described. In one form of this modification, figs. 16 and 17, the naked eye looks at one picture while the other is seen by double reflections from the mirrors, *i*, *k*, the latter of which can be moved about an axis.

2,305. *Ives' Stereo Photochromoscope* relates to an instrument which may be used as a graphoscope or a camera, either for looking at or producing colored views. The description relates to the graphoscope, which may be used in the reverse way as a camera. Fig. 2 is a section of one form. Transparencies *A*¹, *B*¹, *D*¹, representing respectively three primary colors, are fixed on steps as shown. The light passing through *A*¹ is reflected by an opaque mirror *A*², then passes through a screen *A*³ of the color represented by the slide *A*¹, then through transparent reflectors *B*², *D*², and a lens at *d* to the eye of the observer at *F*. Similarly,



outside the box. Sliding shutters opening and closing the openings *l*, *l*, *l*, *l*, at the right moment are also actuated by the same cam. The feed roller *f* is actuated intermittently by a crank (on the cam shaft), connecting rod, and ratchet gear, the pressure roller *e* being actuated by contact with paper. Instead of negatives being used, enlarged or reduced pictures may be projected on the paper by lenses. The negatives may be produced by hand or by letterpress, etc., printing. One method of producing a negative is to prepare paper with sulphate of iron, and to write or print the desired matter with citric or other acid, then immerse the paper when dry in pyrogallol acid, which will blacken all parts of the paper, except those to which the acid has been applied. When part of the print is to be produced typographically, this part is protected from light during the photographic

the light passing through the transparencies at *B*¹ and *D*¹ passes through corresponding colored screens *B*³ and *D*³, and is reflected by *B*² and *D*², through the lens at *d*. The three-colored images are thus superimposed. By duplicating the instrument, stereoscopic effects are produced. Modifications are described with more compact arrangements of reflectors, which may be made slightly wedge shape or platinised to obviate double images.

Principal American Patents.

564,975. **Artificial Asphallum and process of making same*. Richard Dean, Cleveland, Ohio. May 11th, 1893.
 565,204. *Camera*. Eugene Gleason, Onalaska, Wis. November 14th, 1895.

565,216. * *Adjustable Legs for Tripods*. Thomas H. B. Pierce, Dexter, Me. July 27th, 1895.
 565,297. *Coin-Controlled Photographic Apparatus*. James Powers, Brooklyn, N.Y. October 8th, 1895.
 565,323. * *Photographic Roll-Holder*. Thomas H. Blair and Fred H. Kelley, Boston, Mass. November 11th, 1895.
 565,346. * *Optical Lantern*. Charles Goodyear, junr., New York. March 10th, 1895.
 565,626. *Photographic Finder*. Alfred C. Mercer, Syracuse, N.Y. February 11th, 1896.
 565,657. *Photographic Telegraph Recorder*. Clement Ader, Paris. October 24th, 1895.
 565,716. *Magazine Camera*. Jens. P. Andersen, Nellerod, Denmark. January 10th, 1896.
 566,100. * *Roll Holding Camera*. Philip K. Stern, St. Louis, Mo. July 11th, 1895.
 566,382. *Photographic Posing Chair*. James M. Dow, Ogdensburg, N.Y. March 14th, 1895.
 566,451. *Camera Tripod Head*. John H. Fay, London. May 29th, 1896.
 566,643. *Kenotiphone or Katoptrikum*, a sort of improved stereoscope combined with a phonograph. Nicholas Xenos, New York. January 28th, 1896.

564,975. *Artificial Asphaltum and process of making same*. The method of making artificial asphaltum, consisting in subjecting the petroleum product known as "acid sludge," and a suitable fluxing agent to heat sufficient to transform the mixture into a coherent mass.

565,216. *Adjustable Legs for Tripods*. The combination of a longitudinally-slotted member having pegs projecting therefrom, with a frame sliding upon said slotted member, and having a bolt engaging said slot, legs pivoted to said frame and each having a series of holes adapted to receive one of the pegs, and hold said legs in any desired longitudinal adjustment with reference to said slotted member.

565,323. *Photographic Roll-Holder*. 1. In a roll-holder for cameras, the combination with a measuring roll of a marking and clamping device movable toward and from the periphery of said roll and designed to co-act therewith in marking and clamping the film, and detent mechanism controlling the operation of said marking and clamping device.

2. In a roll-holder for cameras, the combination with a measuring roll, of a marking and clamping device, movable toward and from the periphery of said roll, and yieldingly actuated toward the latter, a detent holding said marking and clamping device away from the periphery of the roll, and means carried by the measuring roll for displacing the detent.

3. In a roll-holder for cameras, the combination of a measuring roll having a notched disc, a marking and clamping device, movable toward and from the periphery of said roll, and having a projection to ride on the said disc and adapted to enter the notch thereof, means yieldingly actuating the marking and clamping device toward the roll, a setting detent holding said device away from the roll and the projection thereof away from the notched disc, and means carried by the roll in advance of the notch of said

disc for displacing the said detent; the displacement of the latter, allowing movement of the marking clamp toward the roll until the projection of said clamp encounters the periphery of the notched disc, and said projection subsequently entering the notch, for the purpose described.

4. In a roll-holder for cameras, the combination of a measuring-roll having a longitudinal slot in its periphery and a disc with a notch corresponding in location with said slot; a clamping bar movable toward and from the periphery of said roll, and having teeth to enter the slot therein and a projection to enter the notch of the disc, means yieldingly actuating said bar toward the roll, and a detent to hold the clamping bar away from the roll and adapted to be displaced by a tappet-piece on the roll.

5. In a roller-holder for cameras, the combination of a film marker in the form of a pivoted spring-pressed frame with side arms carrying rollers; a rock-shaft having arms to co-act with the peripheries of said rollers and provided with a handle, and a measuring-roll having means for tripping the rock-shaft, substantially as described.

6. In a roll-holder for cameras, the combination of a take-up roll having a ratchet, a measuring-roll, a spring-actuated film-marker, movable toward and from the said measuring-roll, a rock-shaft having means for moving said marker away from the measuring-roll, and also provided with a dog to engage the ratchet of the take-up roll, and means carried by the measuring-roll for tripping the rock-shaft.

7. In a roll-holder for cameras, the combination of a measuring-roll, having a slot in its periphery and a notched disc with a tappet-piece; a pivoted frame having side-arms equipped with rollers, and a clamping bar, to press against the roll over its slot and provided with projections to enter said slot, the said frame being also provided with a foot-piece to bear on the notched disc, a spring impelling the frame toward the roll; a rock-shaft having arms co-acting with the rollers on the frame to move the latter in opposition to the spring, said shaft also provided with an arm extending in the path of the tappet-piece on the notched disc, a handle on said rock-shaft having a dog, and a take-up roll having a ratchet adapted to be engaged by said dog.

565,346. *Optical Lantern*. In an optical lantern the combination with the lantern-frame partly formed of tubes, of an optical bench formed of parallel rods and legs, and means for detachably clamping the bench to the lantern-frame, substantially as specified.

564,971. *Enlarging Apparatus*. William M. Cline, Lansing, Mich. Assignor of one-half to Gerard N. De Merell, same place. Filed February 10th, 1896. Serial No. 580,049. Though described as "exhibition apparatus," the title we have given seems more appropriate. The patent applies to arrangement of a travelling easel and travelling optical lantern, working to rails on floor and ceiling, the rails being graduated to indicate proportionate size of image.

566,100. *Roll-Holding Camera*. A camera-box, comprising a lens-plate, folding frames hinged to said lens-plate, flexible walls arranged between the sides and back of said frames, and a hinged brace for said frames in the form of a platen or partition which divides the box into compartments; substantially as described.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writings to advertisers please mention THE PHOTOGRAM.

New Advertisers.

R. & J. Beck, Ltd., 68 Cornhill, E.C.
 The Moonlight Lamp Co., Liverpool.
 Alfred Raines & Co., Ealing.
 The Art Reproduction Co., Ltd., Plough-court.
 Lambert Matthews, 97 Queen Victoria-street.
 Thos. Illingworth & Co., Willesden Junction.

New Goods, etc., Advertised.

Vapour Pocket Lamp. The Moonlight Lamp Co.
 Patent Lanterns. Ross & Co.
 Enlarging, etc. Alfred Raines & Co.
 A New Frena. R. & J. Beck, Ltd.
 Photo-Engraving, etc. The Art Reproduction Co., Ltd.
 The Matthews Patent Lantern. L. Matthews.
 Enlargements, etc. Thos. Illingworth & Co.
 "Early Work in Photography." Dawbarn & Ward. Ld.
 Electric Light for Photography. Adamson Bros.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk (*) indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.

Manufacturers are requested to post us as early as possible with particulars of their new goods.

MATERIALS.

Primus Exposure Table. September 5th. Price, 6d. W. Butcher & Son, Blackheath. Extra cards for Primus exposure table, 3d. per packet of fifty. W. Butcher & Son.

Perfect Printing Frame. September 7th. Prices, 10s. 6d. to 6s. 6d. W. Tylar, High-street, Aston, Birmingham.

Tip-Top Studio Camera, complete with stand and slides. Price: 15 x 12, £17 10s.; 12 x 10, £15. O. Sichel & Co., 52 Bunhill-row, E.C.

Simplex Generator. Price £1 18. The Acetylene Gas Co., Ltd., Ashford, Kent.

Leach & Co., formerly Leach and Gelder, Brighthouse, Yorks, printers and trade enlargers, are building new works to accommodate increased business.

Photograms of '96 will be full of interest, and is sure to be bought up eagerly. If you wish for a copy order early. We expect the book will be ready by October 10th.

The Business of James Laing, photographer and photo-material dealer, Shrewsbury, has been taken over by R. L. Bartlett, who for eighteen years has been one of Mr. Laing's assistants.

The Publishing Business of Percy Lund & Co., has been removed from Memorial Hall to 3 Amen Corner, Paternoster Row, E.C., and their miscellaneous photographic material business has been sold to R. J. Appleton and Co., Manningham-lane, Bradford.

At the Photographic Convention of Germany, at Treves, the first prize and diploma for finished and unfinished enlargements was awarded to Bender & Co., of Croydon. In these days, when there is so much talk of materials "made in Germany," it is pleasant to meet with British firms returning the compliment and doing considerable Continental trade.

The Firm of Holmes, Sadler & Holmes, of Manchester, has been dissolved by the retirement of J. J. Sadler, and the business will in future be continued under the style of Holmes Bros., exactly on the same lines as in the past. The firm has obtained the services of H. G. W. Claringbull, who was for many years a representative of Marion & Co., and who will take the place of Mr. Sadler on the road.

As Good as Gold is perhaps hardly praise when speaking of gold chloride, but it is difficult to know what more one can say, since there cannot be much variation of quality in the article, and we always expect our tubes to accurately contain the quantity they claim to possess. The "Axe Brand" gold chloride, placed upon the market by Fuerst Bros., answers all the requirements of those who use this chemical, and buy it in the usual convenient tubes of 15, 30, and 60 grains.

It is with sincere regret that we note the retirement of H. W. Hobson from the firm of Taylor, Taylor & Hobson, for we know that Mr. Hobson's indifferent health has compelled his absence from business for a very long time, and we fear this change indicates continued ill health. The business will be continued exactly on its old lines by T. Smithies Taylor and William Taylor; and W. S. Hobson, who has long represented the firm in London, will continue his services with them.

W. Tylar's perfect printing frame embodies his old patent of making the back in two different widths, to prevent its slipping when opened and closed; but it has also a patent clip arrangement fitted to the longer section of the back, which greatly facilitates the rapid examination of a number of prints. Even for the amateur the frame will be very handy, but its greatest use will probably be for those who have to examine long series of prints, and to whom time is of the greatest possible value.

The Forward Camera, placed on the market a few years ago by O. Sichel & Co., has made for itself a great

position, and is recognised as a standard article for studio use. The demand for something cheaper has induced the same firm to put on the market another exceedingly good line in the form of a camera on the same general lines, but without all the useful movement in detail. Though our own preference would still be for the higher-priced camera, the new one should certainly be seen and very carefully considered by anyone buying a camera for the studio. It is called the "Tip-Top" studio camera.

Geo. H. Grundy, whose decorative tiles we mentioned last month, sends us a list of fifty subjects which he is now prepared to supply from stock. The two or three tiles that we have seen are from excellent negatives, and the subjects include a fine selection of the principal view places in the United Kingdom. Bath, Netley Abbey, The Isle of Wight, Windsor Castle, several well-known seaside resorts, Killarney, The Treaty Stone, Limerick, York and its Minster, Lynnmouth, Norwich Cathedral, Fountains Abbey, Haddon Hall, and some of the scenic beauties of Derbyshire, are all represented. The present capacity of his factory is 1,000 tiles per week.

The Christmas Mounts offered by O. Sichel & Co. are an exceedingly attractive series, and in the better class styles, which include elaborate, but still chaste and tasteful printing in colors and "jewels," are far the best value that we have seen for photographic use. This year the whole series is of the slip-in variety, so that no mounting will be needed, and the sizes are midget, carte-de-visite, and cabinet. The greetings are varied and exceedingly well chosen, and the designs include a very great variety, so that anyone who cannot be suited from the series must be exceedingly hard to please. We understand that a complete series of samples will be sent on deposit of a few shillings, which will be returnable when the set is returned in good order, and they decidedly should be seen before purchases in this line are made.

Acetylene Condenser.—Amongst the half-dozen acetylene gas generators now on the market, one which specially appeals to lanternists and country householders in virtue of its simplicity and cheapness, is made by the Acetylene Gas Co., of Ashford, Kent. It is very properly called "The Simplex," and is supplied in three sizes; the smallest, for use with the lantern, weighs only twelve pounds, and its outside size is 17 x 13. The price, as will be seen from our heading, is very reasonable, and the fittings to apply it to the lantern cost only 7s. 6d. When used for household lighting a condenser in which the gas is dried and purified is strongly recommended, and as acetylene is now at a very low price, its use is sure to be taken up by many a country photographer, not only for lighting his house and studio, but also for photographing purposes.

The little Article, by Fred. W. Cooper, in our last issue, might also be called prophetic, for at the time it was being printed W. Butcher & Son were preparing a very similar piece of apparatus for the market. They have just issued their "Primus" exposure table, which can be fastened either on to the camera case or the camera itself, as it is much smaller than the one recommended by Mr. Cooper. The tablet is supplied with fifty cards for registering twelve exposures each, and only costs 6d., so that few of our readers will care to make such a thing for themselves. Additional exposure cards can be obtained at the rate of fifty for 3d. In addition to the neat little tablet already supplied, we have suggested to Messrs. Butcher & Son that they should also issue a larger size for use in the camera case, as it will give more space, and make it more easier to write particulars when the light is dull or the fingers benumbed.

A Wealth of Christmas Cards, novel and artistic in design, varied to suit every possible taste, and also every possible pocket, is issued by Marion and Co. Year after year this firm has devoted increasing attention to this section of the mount business, but never with happier results than those prepared for present season. Color printing is entirely avoided, but very careful attention has been given to the colors of the mounts themselves, and to their decoration with tasteful and often elaborate embossing with gold-stamped mottoes, and with lithographic printing in some chosen tinted ink. Canvas-faced card in pale greens, blues, buffs, and greys, is largely used, with very happy effect; and the mounts include a variety on which the prints can be mounted with paste; a number of the slip in type, and plenty of variety as regards single, double, and three-fold cards. Some of the two-fold cards, in which it is intended that the photograph shall be mounted on the second page, with a small portion thereof showing through a cut-out opening on the first, are especially attractive, and lend themselves very well to the requirements of the artistic worker.

Dealers will profit by our Snowball scheme—particulars in our next issue and in our Annual.

Pocket Cameras appear to fill a certain want and to have made a distinct place for themselves in the photo-material trade. Possibly the first of the series, the "Photoret," may be said to have been somewhat of a failure, but if so, we think the difficulty arose mainly from the fact that many of the photo-material dealers were shy of it, and left it to be taken up by the toy shops, who were not in such a good position for handling the apparatus, or for making a permanent sale. The "Kombi" and "Pocket Kodak" to mention them in their order of introduction, have certainly been very great successes, and in many businesses have established themselves as standard lines, although in some other cases they seem to have had a run for a time and then fallen quite. Another American visitor, who is to shortly bid for popularity, and with a very good chance of success, is the "Pocket Presto Camera," made by E. P. Koopman, of New York, and imported into England by J. H. Brigham, 102 Fore-street, E.C. The importer is largely in touch with the toy trade, but we know that he thoroughly appreciates the assistance of the photo-material dealers, and we would suggest, in their own interests, that they look into the question of handling this camera before the toy-shop people have done all the boom. The camera is well made in some metal. Measures $3\frac{1}{2} \times 2\frac{1}{4} \times 1\frac{1}{8}$ and will carry either a roll of film for fifty exposures or a plate-holder for four plates. The whole thing is very ingenious, and the directions are so exceedingly brief and simple that we give them in full. There are three different diaphragm apertures to the lens, and altogether the line is a thoroughly attractive one at its exceedingly reasonable price of £2 50c. Each camera is sent out with a spool of film and with a magazine for four plates. Directions:—To set the shutter simply turn "Presto Camera" upside down and press button. To release shutter turn the camera back into position and press button. By inclining camera in direction of time-set arrow, and pressing the button it is instantly converted from a snap-shot to a time exposure camera.

CATALOGUES.

PHILIP HARRIS & Co., of Birmingham, give unusual care to the arranging of their list, which opens with a full and very useful index of the items included. Scarce anything that is of any real use to the photographer is missing from these pages.

THE TRADE list of Alfred Raines & Co., gives a very complete set of prices for every class of enlargement, as well as for retouching, printing, lantern slide making, etc., etc. A special line is made of postage stamp portraits at exceedingly reasonable prices.

A GUIDE to studio furnishing, from A. E. Hoyles & Co., contains illustrated particulars of a large series of backgrounds, studio accessories, etc. In addition to these matters there is a small selection of photographic apparatus both for the studio and for outdoor work. Special features are the border vignette and three-quarter length backgrounds, which should prove an attractive change to many photographers.

A HANDSOME and exhaustive list, from C. P. Goerz, is somewhat out of the line of ordinary catalogues of photographic materials. Of course it deals primarily with his fine series of lenses, but it also gives considerable space to the Goerz-Anschutz hand-camera, of the work of which a great number of reproductions are given. The list contains interesting illustrated articles on the action of the shutter and similar matters, and also a very complete series of half-tone views in the Goerz factory, which give a good idea of the extent of a modern optical business.

E. MAZO, 8 & 10 Boulevard Magenta, Paris, sends a very complete and excellently arranged catalogue of apparatus and materials. Of course most of the French apparatus is much the same in design as that which is used in Britain, but there are a few handy accessories which are not generally on the British market. Amongst dry plates we note that the leading position is given to those made by R. W. Thomas & Co., the particulars of which are illustrated with a reproduction of a very excellent radiogram made on these plates by C. F. Oakley.

For Animals, and for patients that cannot be induced to sit still, a modified radiographic outfit has been designed which can be strapped to the portion which it is desired to radiograph. V. E. Johnson, M.A., is the inventor, and finds such an apparatus necessary since he has made a speciality of radiographing horses.



Be Brief!—We reserve the right of condensing all correspondence, but undertake to leave the meaning intact. Personalities barred. Whenever a man is attacked by name, we wait until a proof can be sent, and the attack and reply published together. Anonymous letters are strongly objected to, and those which are not accompanied by name and address of writer, for our own information, go into the W.P.B.

A Puzzle.

To the Editors: THE PHOTOGRAM.

DEAR SIR AND MADAM,—From time to time, we have had in THE PHOTOGRAM, references to abnormal images appearing on dry plates, and, as such an one has now come under my notice, I have thought that an account of it might interest yourselves and your readers.

Having an order to copy an old cabinet group photograph to whole-plate size, one of my assistants took a plate from



a hitherto unopened box, exposed it on the copy in the usual studio camera and slide, and on development found the curious image (something like a conventional design of a wreath of oak leaves), which appears on the print I am sending herewith. After much speculation as to how it can have been formed, the only solution I can think of as at all possible is, that sometime between the making and the packing of the plate, a coin or medal of copper, having the oak wreath design in relief, may have been laid on the plate, and by pressure, or possibly electrical action, have rendered the silver at the points of contact susceptible to the action of the developer. If, however, you think the matter worthy of notice, perhaps yourselves or some of your readers may be able to offer some other or better solution of the mystery. The next plate, taken directly afterwards from the same box, and exposed and developed under exactly the same condition, gave a perfectly normal negative and copy of the subject. With compliments, I am, yours faithfully,

DRINKWATER BUTT.

A Photographic Guild.

To the Editors: THE PHOTOGRAM.

DEAR SIR AND MADAM,—As a provincial amateur, feeling the need of the advantages offered by a photographic society, I write to ask if you do not think that something could be done to form a guild, and to band together the whole of those amateur photographers who are not attached to any photographic society. I would suggest that it should be a very

modest affair at first, and I do not see how it could be arranged unless under the friendly control of one of the photographic journals or a photographic society. But the most important thing, if it is to be a success, must be that it is financially independent, and not subsidised by any one.

As I have no completed scheme, I suggest the following rough ideas, and hope that you will admit this letter and find space for the opinions of anyone who may be interested.

Title.—The Photographic Guild.

Subscription.—small; say 2s. 6d. or 5s. per annum. I think the smaller sum would pay all expenses if the thing were largely taken up.

Management.—A committee of thirty members, ten London, ten provincial, and ten foreign and colonial members, elected by ballot of the members of the guild. Also a president, an honorary secretary, and a treasurer (who should all reside in London). The committee should elect from their number an executive of five London members, in addition to the president, hon.-sec., and hon.-treasurer.

(A paid secretary, working under the hon.-sec., would conduct the routine business and correspondence.)

Rooms.—Offices, with small reading-room, dark-rooms, etc., should be provided in London, but as the object is mainly to benefit provincial, colonial, and foreign members, the expenses of offices should be kept as small as possible.

A FEW OF THE ADVANTAGES.

List of Members.—A list should be published with all names and addresses, and it should be understood that every member thereon was prepared to help any other member of the guild to any reasonable extent. This list would be an immense advantage to touring members, who would feel that wherever they went there was someone whom they had a right to address for advice as to hotels, lodgings, dark-rooms, etc., and on whom they could call in an emergency.

Consulting Experts.—A small list of those advanced workers who were willing to help younger photographers in their difficulties, could be added, and would prevent our worrying the editors so much.

Badges of Membership.—inexpensive, but changed in style every year—would act as introductions between members on their travels.

Permissions to Photograph would be much more easily obtainable by members of a recognised guild than by mere ordinary amateurs, and for this purpose *official stationery*, of copyright design, should be supplied to members at cost price. In the case of important work, where permission was specially difficult to obtain, social and personal influence could be brought to bear by some of the influential members, approached through the secretary.

Circulating Circles could no doubt be formed within the guild, for the circulation of pictures for criticism, etc., and I think a good *circulating library* should be formed, so that members could borrow the more expensive books on payment of the postage (and possibly a deposit).

Apparatus Loan Department.—Those who wish to do occasional special work, should be able to borrow apparatus on payment of carriage, deposit of value, and a small rent per week to cover interest, depreciation, and wear-and-tear. In this way photo-micrographic apparatus, spectroscopes, enlarging and magic-lanterns, radiographic apparatus, etc., might be made available for investigators who are willing to work, but who are hampered by poverty.

Affiliated Societies.—Existing photographic societies should be allowed to become affiliated (on condition that their meeting, etc., be open to bona-fide non-residents when travelling in their districts) at an inclusive fee: say at the rate of 1s. per member.

Income and Expenses.—There are many other details I might suggest, but for fear of trespassing too much on your space. I will leave them to be dealt with by others, and say one word as to income, etc. I think that at least 10,000 members should easily be obtained, which, at only 2s. 6d each, would be £1,250 a year. The chief expenses would be:—

Rooms	say, £120
Salaries (Sec. & Assistant)	£150
Leaving, for printing, stationery, and incidental expenses, nearly	£1,000 a year.

Will you kindly find space for this very long letter, and ask your readers to give their opinions. And oblige yours very truly,

RICHARD HARDING.

[While we cannot possibly find room for a discussion on the pros. and cons. of such a large subject, we shall be glad to print any definite, practical suggestions as to the management of, and the work that should be undertaken by such a society. We shall be especially pleased to have the name of every reader who would be willing to join such a society for the first year, provided the subscription be not more than 5s. per annum; and the management be in the hands

of a committee elected by the members. If a considerable number show an interest, we will take steps to call a meeting in London, at which the matter can be discussed.—Eds.]

Camera versus Comps.

To the Editors: THE PHOTOGRAM.

DEAR SIR AND MADAM,—Being rather in a flabbergasted condition, a friend remarked, "Cheer up, you'll soon be dead!" and really these words would be most appropriate to the process worker if what we read in *The Morning* of June 29th were gospel.

Were the facts as stated, what anathemas would be heaped on the head of a certain great inventor by poor forlorn process workers, compositors, machine-minders, etc., etc. I shudder to think of the unemployed and their sufferings; of idle machinery, useless blocks, and bankrupt masters, and, as I write, dim visions of pale, wan, starving children, and hungry men and women, stare me in the face—and all this through one man's invention.

But, thank goodness! it's only a vision, *very visionary, indeed*. In the first place, let me call your attention to the leaf enclosed herewith, cut from an old catalogue of a photo-dealer, which was issued quite seven years ago, if not more, and giving illustrations and descriptions of "Urie's Printing Machine." Surely this is *very similar*, if not the same, as Mr. Friese Greene's printing machine.

And secondly, the writer of the article referred to must be very imaginative indeed, and little conversant with the hurry and drive of a newspaper printing office if he thinks that the process described is capable of ousting the present methods. For instance, in the printing department, notice the various processes the prints would have to undergo—exposure, development, first washing, fixing, second washing, and last, but not least, the drying, and I presume it means the drying of a gelatino-bromide-coated paper, which means a good deal. And then, as a contrast, consider for a moment the rushing rapidity of splendid letterpress machinery.

Then the dream as to outstripping compositors is so good as a dream, but let me ask, is there not a "Linotype" machine, which does not stop to photograph the lettering, but actually casts it from the molten metal "as the operator actuates the key-board?" And as to the promised improvement in quality, together with reduction in prices, I fail to see where these can come in.

As a practical photographer and process worker of twenty years' experience, and with a deep interest in all that pertains to printing, I believe heartily in photographic progress, but in this instance, "imagination's utmost stretch, in wonder dies away." What a pity!

Yours, trembling on the threshold of "the new era in printing,"

HENRY R. EASON.

[This subject was partially dealt with in "Camera versus Comps," page 146. The fact that Urie's printing machine was not a commercial success hardly affects the matter, for since its time we have advanced, and mechanical printing, developing, fixing, and washing, is a matter of everyday business in Berlin and New York. (See *THE PHOTOGRAM*, October, 1895.) As to the visionariness of the scheme, we believe it is an open secret that Sir George Newnes has Friese Greene's rights in hand, and has invested considerable capital. Sir George Newnes is not a visionary. It will be remembered that steamboat navigation was proved to be physically and mechanically impossible not a century ago.—Eds.]

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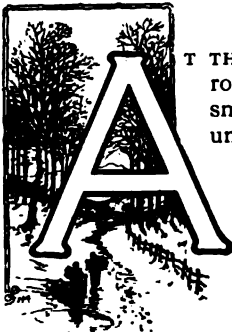
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Notes on Picture-Making.

BY HALLTON EAST.

Crowded out from PHOTOGRAMS OF '96.

"Art is nature seen through a temperament."—Zola.



AT THE exhibition in Pall Mall last year a friend drew me across the room, and said, "how *can* the judges give an award to a mere snap-shot like this, when careful, serious work like *this* goes unrecognised." The medalled picture was Alfred Stieglitz' *Scurrying Home*, the other was a group of some eighteen or twenty people, of which I forget both title and artist, but of which my friend spoke somewhat as follows:—"Here you have a score of figures—a most difficult party to group—well arranged, every one well posed, every one well lighted, and evidently every one a good portrait. Here you have ample proof that the photographer has spent years of study to attain his skill; he must have a fine studio, with good and expensive apparatus; he has spent much time and trouble on this group, which is good in every detail; yet the medal goes to a print that is evidently enlarged from a snap-shot, which may have been taken by a beginner, with no experience, no training, no skill, and no apparatus save a half-guinea hand-camera. If these things are possible, how can I go to work to prepare an exhibit that has a chance of a prize, and what is the principle of the judges in awarding the medals?" I could only reply, somewhat lamely, that the main idea of the exhibition was a collection of *pictures*, and that the medalled snap-shot undoubtedly had pictorial merit, while the group, though a fine example of technical work, could by no means be called a picture.

Since then I have thought over the matter a good deal, and it seems as if a clear understanding of Zola's definition of "art" would be useful to many who wish to prepare exhibition work. The definition has two main points, and artistic work or artistic perception is only possible to those who realise both. It may be written:—

"Art is *nature*, seen through a temperament," or

"Art is *nature*, seen through a *temperament*,"

and as one half or the other is emphasised in our practise we fall into the school of naturalists or the school of impressionists. To me, this is a very helpful definition, and I think it well worth remembering.

In every work of art there must be nature, *and* evidence of a temperament. When either element exists alone the work is no work of art, and the permanent charm of any picture depends largely upon the balance of the two. If a photogram is a mere copy of nature it may be useful as a map, a plan, or a record, but has no claim to be called a picture. At the Salon it would not be accepted, and at Pall Mall it ought not to be, unless it is distinctly placed in a class for technical work.

On the other hand, a photogram which may be full of "soul" and "feeling," but untrue to nature, would have no place at Pall Mall, and if taken at the Salon would be accepted for its strong points and in spite of—not from any affection for—its faults.

This brings me to a most important division between two schools of photographic critics. There are those who, in making their pictures, in selecting from those submitted for exhibition, and in awarding position and medals, look only for absence of fault. Yet absence of fault is a very negative kind of virtue, and an exhibition of pictures chosen on this principle is usually a dead-alive, mediocre and wearisome affair. The other school looks for definite good qualities, for evidence of inspiration, aim and intention, and chooses a work with definite strong points and some weak ones, rather than a work which has simply an absence of defects.

The ability to see strong points in a picture; to discover the difference between intention and chance, is one of the first requisites in a judge. If he is the right man for his post he will probably make some of his awards to pictures that are distinctly faulty in some point, and the uneducated critic, who is often able to see the faults but not the virtues, is apt to condemn the judge for giving the palm to a bad work. Some even go further, and imagine that the award is given because the faultiness is pleasing to the judge, and in preparing work for some future exhibition at which he is to make the awards will deliberately commit the faults, in the hope of catching a medal. There is no fear of a competent judge being unable to detect faults that are apparent to a less trained critic.

It is not necessary that a picture should appeal *only* to trained artists. The work that is approved by experts and also by the public is better work than that which is equally approved by experts, but not understood by the public. On the other hand, the picture which is popular is not necessarily good, and if popular taste is at variance with the judgment of trained artists, I think we must admit that the trained few are right, while the untrained multitude are wrong. In such a case (there are many in the exhibitions and in such a book as the present) it seems wise to study the work we cannot understand, and to find, if possible, the points for which experts commend it.

If we come, now, to the production of a picture, we must first consider nature, and if our work is to enable anyone to see nature through our temperament we must know and study nature ourselves. The ignorance of natural facts and the want of observation amongst photographers is most appalling—though it is common to all untrained people. Take the instance of the human face, as photographed by the majority of our professional photographers. We find, with a full face, a high side lighting is often adopted, and to soften the shadows, a reflector, low down, on the opposite side. The result is that on the lighted side of the face the upper part of the eye is in shadow, while on the other side the lower part of the eye is in shadow and the light is thrown under the brow. Such false work is turned out by hundreds of studios, and accepted without demur by almost every educated family, although it gives a representation of the face that defies all laws of anatomy and natural lighting.

In landscape, too, the study of nature is most important, and almost entirely neglected. The majority of photograms shew no evidence of

thought. Very little thought is needed to tell us that fresh green grass is far from being the darkest object in a landscape; while the deep blue sky is far from being the lightest—yet how many thousands of landscapes receive praise in spite of their representing the grass as the deepest shadow and the sky as the strongest light in the picture. Most people know that shadows, in nature, are practically never dead black. Yet we constantly see so-called pictures in which a great breadth of the paper is covered with an absolutely black patch, without detail or transparency.

It is not necessary to go further into this question, but it is obvious that only the man who has studied nature, and studied her deeply, can be sure of producing work possessing the first requisite of Zola, that it should be (or represent) nature.

A mere transcript of nature, however, is not art, and one of the first things for a picture-maker to learn is that literal truth and artistic truth are not necessarily the same thing. It is literally true that on last Christmas eve I gathered a small bunch of roses from a tree growing outdoors at my home. If I had cleverly photographed those roses as they hung on the tree and called the result "Christmas Eve," I should have been literally true, but artistically false. In the same way, I am old enough to remember a heavy fall of snow in June; but a landscape view made at that time would not be a picture of "A June Landscape." These things would be curiosities, and would be literally, but not pictorially true—because not true to nature. Two friends sitting together may make a picture; but if one is represented as standing on his head it is quite unlikely that a picture will be the result. In the same way, cats riding on bicycles and dogs smoking may be depicted in a way that is very interesting and amusing, but will never make "pictures" in any very high sense of the word. Many of the photograms submitted to the exhibitions are extremely interesting, and are technically good—but if the interest is not pictorial they have no right to be accepted or judged as pictures.

If mere interest of subject and good technical photography do not make a picture, it is nevertheless true that the subject of a picture must have interest, and the higher the interest, the better the picture. Loftiness of theme and simplicity of treatment are the two greatest factors in pictorial work. Millet's "Angelus," is considered a work of art because its thought is noble and the expression of the thought is simple and powerful.

A step above the bare record of fact we come to the record of interesting fact, but if it only attracts the childish or uncultivated, its art value is not great. As we rise from the illustration of commonplace action to deal with poetical and imaginative subjects our art becomes more subtle, and our work more attractive to refined and cultivated people; but the highest art of all is when the "story" can be dropped altogether, and the emotions can be excited by the representation of nature—a landscape or a human face—in such a manner as to show deep insight and a careful analysis of nature's moods or human feeling.

The interest of a picture must not depend upon its title; a most important fact that many people ignore. If the picture, without title, does not tell

a story, there is something wrong. The work may be interesting as a reminiscence or as a "local view," but it is not "art." The title has its distinct advantages—it enables us to identify the picture in conversation, and helps us to know the artist's intention. But if some intention is not apparent before the title is known, if the work does not attract our attention, it is evident that the work is not art, or—and this is very important—that we are not sufficiently educated to realise and appreciate the artist's thought.

It is not necessary that a picture should tell the same story to all; in fact, many of the best pictures are those which have a different message for every observer. The man who with one canvas, can touch, and cheer, encourage or reprove a dozen different natures, is a great artist. But to every educated observer a picture should tell some story, or it should excite some emotion. The group of twenty people, carefully posed and lighted, tells us some facts. It lets us know that there were twenty people, that they were together at one time, that they wore certain clothing, that they stood in certain positions, and that their faces and clothing were clean. But these facts are not a story, whereas the two old Breton women, with their blowing garments and heavy sabots, their bent heads and shoulders and swinging arms, hurrying across the deep-rutted sand at once attract our attention and set us on the track of a dozen ideas and speculations.

It is impossible for me to deal at any length with definite examples, but one or two may be

Sutcliffe in an issue of *THE PHOTOGRAM* [February, 1896.—Eds.]; but its points as they appeal to me may be summed up as brilliant sunshine, represented without harshness, and vivid life without fussiness. *Sibylla*, one of the frontispieces to the last annual, seems another good example of real



BLEA TARN, AND LANGDALE PIKES.

By Godfrey Bingley.

art in photography. The treatment of the subject is severely simple. From the hands of the ordinary portrait photographer we should have had a simple portrait of a not-very-handsome young woman. In Mr. Annan's work we have a full face of character, expression and power. Strength, not masculine and aggressive, but the calm, persistent strength of woman is perhaps the key-note; and this is largely emphasised by the position of the head at the top of the picture, and by its size, relative to the "canvas." But the seat of this expression of strength is in the calm, tranquil eyes, the firm mouth and jaw, and the outline of the chin which is *just* shown on the left side. The photographer who said "now smile a little, please," would have suggested the ruin of the picture, though possibly the improvement of the portrait from the ordinary point of view. The simple hair-dressing and the lines of the dress emphasise the idea of strength. The eyes speak of patient endurance, of sorrow and trial; and the more one studies the picture the more one is haunted by its mystery and checked by its reserve. The eye of an artist was required to see the beauty in that face, for it is not "pretty"; and the skill of an artist, trained by long observation until the choice of the right pose had become almost intuitive, was needed to complete the picture. Only an artist could know the value of that slight outline of the left side of the chin, and only an artist would have chosen that position for the eyes, the direct gaze which fully brings out their reposeful power. It will be a good lesson to go through the last annual, comparing this *Sibylla* with the other portraits, noting the variety of treatment of the human face by different artists.



SUNSET.

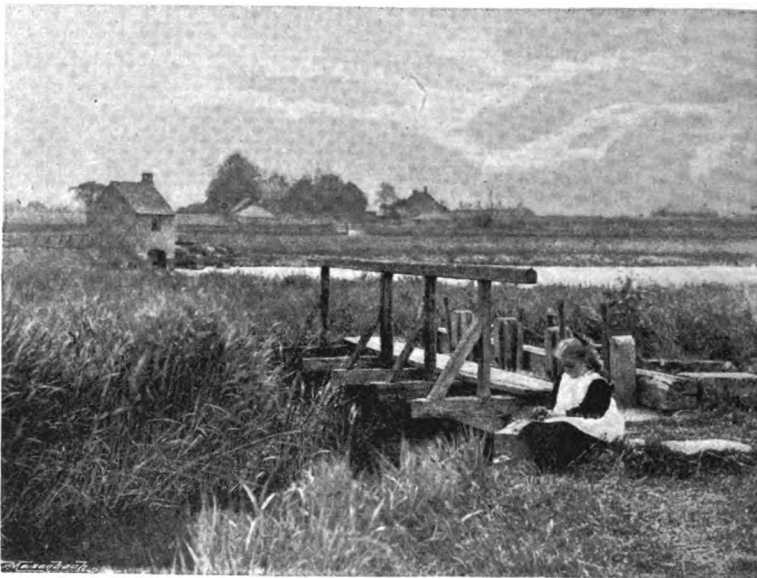
Salon 71.

By W. T. Greatbatch.

mentioned. That "Brompton Road" which was reproduced in your annual last year (p. 65) is a very fine instance of how "nature" in the shape of a common-place London street may be seen through a "temperament." I need not criticise it in detail, for this was ably done by Mr. Gleeson White in the last Annual, and by Mr. Frank M.

I trust that what I have written may have suggested to some of the would-be exhibitors certain differences between merely good technical photography and picture-making. It will be seen that an insight into nature, and a power of selection are the main requisites to success. The knowledge of what to do, what to aim at, is of prime importance. How to do it can be learned from the text-books. Here comes in the technical ability, and one cannot too strongly condemn the idea that technique is unimportant. If you aim at picture-making you must be prepared to use every possible photographic means. It may be suggested that the work, to be legitimate, must be by single printing from a single negative, developed without local acceleration or restraint, and

tion, whether the foreground or the near middle-distance is to be "sharp," and the diaphragm must be chosen to give the distance such sharpness as is thought desirable. The plate, ordinary or orthochromatic, with or without color-screen, and the exposure, are important factors. The development gives considerable control, and may often be locally accelerated or restrained with great advantage. After development a proof should be taken and carefully studied, for the picture is by no means necessarily finished. It may be that general intensification or reduction is necessary. If not, the foreground is often much too full of bright detail, which may, with advantage, be subdued by rubbing down the surface of the negative, and other parts may need



MOTHER'S POSY.

Pall Mall, 132.

By John Gunston.

printed without retouching or "fake." If these are the rules of your exhibition, by all means abide by them, but for a picture-maker such a course is as ridiculous as would be the adoption of the rules of an egg-and-spoon race when attempting to break the ten-mile record.

Suppose a landscape is to be attempted. Careful selection of subject is first necessary, and before exposing a plate it is well to plan exactly what phase of nature you wish to represent, and to what extent poetry or feeling can be introduced. The best aspect of lighting must be considered, not only with reference to time of day, but also to the time of year, whether the shadows of the trees, etc., are to be at their longest or their shortest. The composition, and especially the principal massing of light and shade must have careful attention, and then comes the question of perspective, the use of long, short, or medium focus lens. Focussing should have careful considera-

lightening, which is, perhaps, best done with a dyed varnish coated all over the glass side, and scraped away wherever it is not needed. The worker must then decide on the printing process, and whether double printing, to provide clouds, will be necessary. In the printing, it may be advisable to soften portions or the whole of the subject, by interposing celluloid or thin glass between the negative and the sensitive paper. Even after this there are the extremely important questions of trimming, mounting and framing, giving ample scope for natural taste and for experience.

All these details must be considered with but one object in view, the production of a work that accurately represents the phase of nature which the artist decides to portray. In such a manner a photogram may truly become a work of art, for it may enable us to see nature through a temperament.

Fields for Research. I.—Thermography.

FOR the benefit of those photographers who wish to make their work a means to some definite practical end, we propose to describe one or two promising but unfinished researches. In connection with thermography, and also with odic force, which will be treated next month, the reason for dropping the researches seems to have been that both of the subjects came up in Daguerreotype days, when research was comparatively difficult. Why they have never been revived and thoroughly exhausted with our greater dry-plate facilities, we cannot imagine. In these two directions at any rate a wide field seems open for immediate work, which will require little manipulative skill, and which promises an immense return in proportion to the labor.

On page 87 of the April issue of *THE PHOTOGRAM* will be found a thermogram, by C. F. Townsend, together with an account of how it was obtained, and some of the difficulties with which he met. In the literature of the X-rays, scattered over the first few months of the year, will be found many reports of supposed X-ray effects, which were undoubtedly thermographic, and this extensive series of errors of observation makes it the more important that the subject should be exhaustively investigated, and the results placed on record, not only for the probable practical value of thermography, but also for the light which may be thrown on other lines of research.

For what we know of thermography we are indebted in the first place to M. Moser, of Königsberg, and his communications (in 1842) to the Academy of Sciences, of Paris. In the second place we are indebted to Robert Hunt, one of the most careful experimenters and writers ever connected with photography, for his researches on the subject, to which he gave the title, "Thermography," and for a chapter devoted to it in his book on "Photography," which formed one of the volumes of the "Encyclopædia Metropolitana."

As the book has long been out of print, we cannot do better than quote extensively from its pages, reserving but a few lines of space for our own concluding remarks.

Hunt says:—"1. Dr. Draper, in *The Philosophical Magazine* for September, 1840, mentions a fact which has been long known, 'That if a piece of very cold clear glass, or what is better, a cold polished metallic reflector, has a little object such as a piece of metal laid on it, and the surface be breathed over once, the object being then carefully removed, as often as you breathe on it again a spectral image of it may be seen; and this phenomenon may be exhibited for many days after the first trial is made.' Several other similar experiments are mentioned, all of them going to show that some mysterious molecular change has taken place on the metallic surface which occasions it to condense vapors unequally.

"2. On repeating this simple experiment I find that it is necessary, for the production of a good effect, to use dissimilar metals; for instance, a piece of gold or platina on a plate of copper or of silver, will make a very decided image, whereas copper or silver on their respective plates give but a very faint one, and bodies which are bad

conductors of heat placed on good conductors, make decidedly the strongest impressions when thus treated.

"3. I placed upon a well-polished copper-plate a sovereign, a shilling, a large silver medal, and a penny. The plate was gently warmed by passing a spirit lamp along its under surface. When cold the plate was exposed to the vapor of mercury; each piece had made its impression, but those made by the gold and the large medal were more distinct; not only was the disc marked, but the lettering on each was copied.

"4. A bronze medal was supported upon slips of wood placed on the copper, one-eighth of an inch above the plate. After mercurialisation, the space the medal covered was well marked, and, for a considerable distance around, the mercury was unequally deposited, giving a shaded border to the image: the spaces touched by the mercury (?) were thickly covered with the vapor.

"5. The above coins and medals were all placed on the plate, and it was made too hot to be handled, and allowed to cool without their being removed; impressions were made on the plate in the following order of intensity—gold, silver, bronze, and copper. The mass of the metal was found to influence materially the result; a large piece of copper making a better image than a small piece of silver. When this plate was exposed to vapor it was found that the gold and silver had made permanent impressions on the copper.

"6. The above being repeated with a still greater heat, the image of the copper coin was, as well as the others, most faithfully given, but the gold and silver only made permanent impressions.

"7. A silvered copper-plate was now tried with a moderate warmth. Mercurial vapors brought out good images of the gold and copper; and the silver marked, but not well defined.

"8. Having repeated the above experiment many times with the same results, I was desirous of ascertaining if electricity had any similar effect; powerful discharges were passed through and over the plate and discs, and it was subjected to a long-continued current without any effect. The silver had been cleaned off from the plate; it was now warmed with the coins and medals upon it, and submitted to discharges from a very large Leyden jar. On exposing it to mercurial vapor, the impressions were very prettily brought out, and, strange to say, spectral images of those which had been received on the plate when it was silvered. Thus proving that the influence, whatever it may be, was exerted to some depth in the metal.

"9. I placed upon a plate of copper, blue, red, and orange-colored glasses, pieces of crown and flint glass, mica, and a square of tracing paper. These were allowed to remain in contact half an hour. The space occupied by the red glass was well marked, that covered by the orange was less distinct, but the blue glass left no impression; the shapes of the flint and crown glass were well made out, and a remarkably strong impression where the crown glass rested on the tracing paper, but the mica had not made any impression.

"10. The last experiment repeated. After the

exposure to mercurial vapor, heat was again applied to dissipate it; the impression still remained.

"11. The experiment repeated, but the vapor of iodine used instead of that of mercury. The impressions of the glasses appeared in the same order as before, but also a very beautiful image of the mica was developed, and the paper well marked out, showing some relation to exist between the substances used and the vapors applied.

"12. Placed the glasses used above with a piece of well-smoked glass, for half an hour, one-twelfth of an inch below a polished plate of copper. The vapor of mercury brought out the image of smoked glass only.

"13. All these glasses were placed on the copper and slightly warmed: red and smoked glasses gave, after vaporisation, equally distinct images, and orange the next, the others left but faint marks of their forms; polishing with Tripoli and putty powder would not remove the images of the red and smoked glasses.

"14. An etching, made upon a smoked etching ground on glass, the copper and glass being placed in contact. The image of the glass only could be brought out.

"15. A design cut out in paper was pressed close to a copper-plate by a piece of glass, and then exposed to a gentle heat; the impression was brought out by the vapor of mercury in beautiful distinctness. On endeavoring to rub off the vapor, it was found that all those parts which the paper covered amalgamated with mercury, which was rubbed from the rest of the plates: hence there resulted a perfectly white picture on a polished copper-plate.

"16. The colored glasses before named were placed on a plate of copper, with a thick piece of charcoal, a copper coin, the mica, and the paper, and exposed to fervent sunshine. Mercurial vapor brought up the images in the following orders:—Smoked glass, crown glass, red glass, mica beautifully delineated, orange glass, paper, charcoal, the coin, blue glass; thus distinctly proving that the only rays which had any influence on the metal were the calorific rays. This experiment was repeated on different metals, and with various materials, the plate being exposed to steam, mercury, and iodine: I invariably found that those bodies which absorbed or permitted the permeation of the most heat gave the best images. The blue and violet rays could not be detected to leave any evidence of action, and as spectra imprinted on photographic papers by light, which had permeated these glasses, gave evidence of the large quantity of the invisible rays which passed them freely, we may also consider those as entirely without the power of effecting any change on compact simple bodies.

"17. In a paper which I published in the *Philosophical Magazine* for October, 1840, I mentioned some instances in which I had copied printed paper and engravings on iodised paper by mere contact and exposure to the influence of calorific rays, or to artificial heat. I then, speculating on the probability of our being enabled, by some such process as the one I then named, to copy pictures and the like, proposed the name 'Thermography' to distinguish it from photography.

"18. I now tried the effects of a print in close contact with a well-polished copper-plate. When exposed to mercury, I found that the outline was very faithfully copied on the metal.

"19. A paper ornament was pressed between two plates of glass, and warmed; the impression was brought with tolerable distinctness on the under and warmest glass, but scarcely traceable on the other.

"20. Rose leaves were faithfully copied on a piece of tin plate exposed to the full influence of sunshine; but a much better impression was obtained by a prolonged exposure in the dark.

"21. With a view of ascertaining the distance at which bodies might be copied, I placed upon a plate of polished copper a thick piece of plate glass, over this a square of metal, and several other things, each being larger than the body beneath. These were all covered by a deal box, which was more than half-an-inch distant from the plate. Things were left in this position for a night. On exposing to the vapor of mercury, it was found that each article was copied, the bottom of the deal box more faithfully than any of the others, the grain of the wood being imaged on the plate.

"22. Having found, by a series of experiments, that a blackened paper made a stronger image than a white one, I very anxiously tried to effect the copying of a printed page or a print. I was partially successful on several metals; but it was not until I used copper-plates amalgamated on one surface, and the mercury brought to a very high polish, that I produced anything of good promise. By carefully preparing the amalgamated surface of the copper, I was at length enabled to copy from paper, line-engravings, wood-cuts, and lithographs, with surprising accuracy. The first specimens produced exhibited a minuteness of detail and sharpness of outline quite equal to the early Daguerreotypes and the photographic copies prepared with the chloride of silver.

"The following is the process adopted by me, which I consider far from perfect, but which affords us very delicate images:—A well-polished plate of copper is rubbed over with the nitrate of mercury, and then well washed to remove any nitrate of copper which may be formed; when quite dry, a little mercury taken up on soft leather or linen is well rubbed over it, and the surface worked to a perfect mirror. The sheet to be copied is placed smoothly over the mercurial surface, and a sheet or two of soft clean paper being placed upon it, is pressed into equal contact with the metal by a piece of glass, or flat board; in this state it is allowed to remain for an hour or two. The time may be considerably shortened by applying a very gentle heat for a few minutes to the under surface of the plate. The heat must on no account be so great as to volatilise the mercury. The next process is to place the plate of metal in a closed box, prepared for generating the vapor of mercury. The vapor is to be slowly evolved, and in a few seconds the picture will begin to appear: the vapor of mercury attacks those parts which correspond to the white parts of the printed page or engraving, and gives a very faithful but somewhat indistinct image. The plate is now removed from the mercurial box, and placed into one containing iodine, to the vapor of

which it is exposed for a short time; it will soon be very evident that the iodine vapor attacks those parts which are free from mercurial vapor, blackening them. Hence there results a perfectly black picture, contrasted with the grey ground formed by the mercurial vapor. The picture being formed by the vapors of mercury and iodine, is, of course, in the same state as a Daguerreotype picture, and is readily destroyed by rubbing. From the depth to which I find the impression made in the metal, I confidently hope to be enabled to give to these singular and beautiful productions a considerable degree of permanence, so that they may be used by engravers for working on.

"It is a curious fact that the vapors of mercury and of iodine attack the plate differently; and I believe it will be found that vapors have some distinct relation to the chemical or thermo-electrical state of the bodies upon which they are received. Moser has observed this, and attributes the phenomena to the colors of the rays which he

supposes to become latent in the vapor on its passing from the solid into the more subtle form. I do not, however, think this explanation will agree with the results of experiments. I feel convinced that we have to do with some thermic influence, and that it will eventually be found that some purely calorific excitement produces a molecular change, or that a thermo-electric action is induced which effects some change in the polarities of the ultimate atoms of the solid."

We have quoted these observations at considerable length because they are all suggestive, though it is obvious that the methods must be greatly modified in applying them to work with dry plates. Paragraph 21, in view of the great interest recently taken in radiography, seems of especial importance, but every paragraph is valuable, as giving some novel phase of the work. We trust to hear that some of our readers have taken up the subject, and shall be pleased to report their success.

A Hand-Stand Camera.

By FRED. W. COOPER.

MANY amateur photographers are not blessed with sufficient of the needful to purchase a hand-camera in addition to the usual stand-camera, but if the directions here given are followed, a hand-stand camera that will answer all requirements will be the result. The finish and appearance will depend upon the ability of the person who takes the matter in hand. The following list comprises all that is required beyond a slight knowledge of ordinary carpenters' tools, and careful, thoughtful fitting of the parts as described:—

No.	Where for.	What required and sizes.	Approximate cost.
			s. d.
1	sides	2 pcs. American white wood, $9\frac{1}{2}$ " long \times 7" broad \times $\frac{1}{2}$ " thick...	3
2	top and bottom	2 pcs. American white wood, $9\frac{1}{2}$ " long \times 7 $\frac{1}{2}$ " broad \times $\frac{1}{2}$ " thick...	3
3	ends	2 pcs. American white wood, 7" long \times 6 $\frac{1}{2}$ " broad \times $\frac{1}{2}$ " thick...	3
4	lid	2 small brass hinges 1" long \times about $\frac{1}{2}$ " broad...	4
5	lid	2 small brass catches as described below...	4
6	scale and screw pl.	2 small brass plates " " "	6
7	—	2 doz. 1" size No. 7 screws, and 1 doz. $\frac{3}{4}$ " No. 5 screws...	3
8	—	1 oz. 1" gimp pins or panel pins— <i>not</i> ordinary 1" sprigs	1
			2 3

All the wood must be cut perfectly square and planed smooth, including the edges. Each piece must be cut exactly to size given so that they will fit properly in position. The camera I have chosen of which to illustrate the adaptation, is a $\frac{1}{2}$ " plate. That is, perhaps, the commonest type on the market, but others will answer equally well. If any other size is to be used the above measurements will have to be altered according to camera chosen, but the principle would be the same in almost every case.

Take one of the pieces (No. 3 on the list), and mark as shown in fig. 1. The ring, which

should be about 2-in. diameter, can be made with a pair of compasses, first having marked the centre by lines crossing from corner to corner. Now bore a hole with a sprig bit (or bradawl) at A, pass a fret saw through and cut out the piece, following the compass mark very closely to make a neat job. Rub this all over with sand or glass paper stretched over a small block of wood or cork, also smooth the edges of the hole, and you have the front of camera box complete.

Now take one of the pieces (No. 2) and bore a hole, about 1-in. diameter, through the wood $5\frac{1}{2}$ -in. from one end, and in centre from side to side as per fig. 2. At the bottom of sketch No. 6 is shown section of hole with camera screw in position. The screw passes through a small brass plate (No. 6 on list), which is let into the bottom of box flush with the surface, as at P in fig. 6. This plate, $1\frac{1}{2}$ -in. long \times 1-in. broad, is shown in detail in fig. 7. It may be made at home or purchased at any photographic store or ironmongers. The centre hole should just fit the small tripod screw—the other holes should be countersunk for screws— $\frac{3}{8}$ -in. screws must be used and the heads driven down or filed flush with the surface of the wood. Next cut an oblong hole about $1\frac{1}{2}$ -in. \times $\frac{1}{2}$ -in., as shown at H in fig. 2, $1\frac{1}{2}$ -in. from edge and $1\frac{1}{2}$ -in. from end to centre of hole, to work the rack and pinion adjustment through. Rub the whole piece over with glass paper and you have bottom of camera box complete.

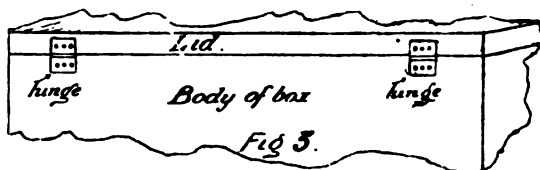
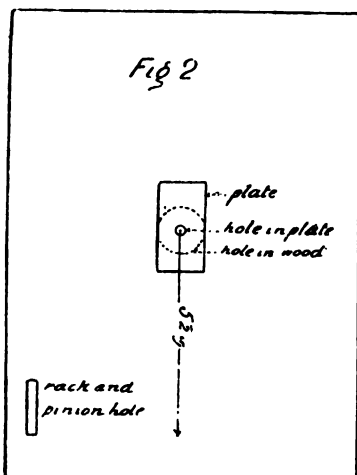
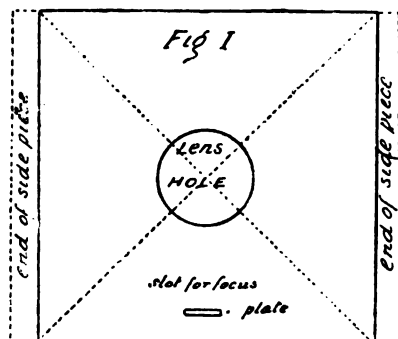
Next rub all the remaining pieces of wood with glass paper, taking care not to round the edges, and proceed to fit together as follows:—Take one of the side pieces (No. 1) and the back, viz., one of pieces No. 3, and fasten at right angles (as shown by dotted lines in fig. 1) to each other with the panel pins; two pins will hold them in position for the time being—all joints can be made more secure when parts are in position—now fix the other side to back and then nail the front in; next fasten the bottom piece in position with a pin

at each side and end—be sure the oblong hole comes to front of box, viz., towards lens hole.

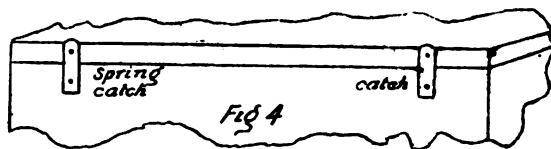
You will now have an oblong box without lid, and if care has been exercised in putting together the edges and joints should be square and even. If all is right a few more panel pins and two 1-in. screws (No. 7 on list), driven well and carefully home, will hold all firm.

The lid is to be hinged in position next, and should be done carefully so as to prevent strain when opening and closing camera case. Fig. 3 will show the simplest way of doing this. It is not, perhaps, the neatest way, but will stand

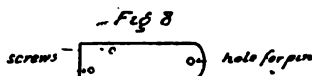
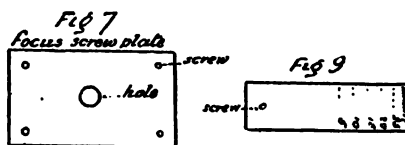
The box is now ready for the finishing touches. The wood can be thoroughly well rubbed with glass paper, all parts made smooth and clean, and the whole coated with vegetable black or lamp black mixed to the consistency of cream with French polish, and diluted as required with methylated spirit, the whole being stirred well together. Any oil or color dealer will mix this for you. It gives a dead black surface and will not rub off. If a polished surface be desired, two coats of good varnish over the above-named dead black will give an excellent result. If the box be covered with leather it will look much neater, and this is



not a difficult matter. A skin of leather can be got from almost any bookbinder, cost about 5s. or 6s., and may be put on as follows:—Cut the leather as shown in fig. 5, leaving a little at front



and side of lid, and pieces for the edges of lid. Get some good stiff shoemaker's paste, rub well into the leather with a stiff brush until the leather is soft and pliable. See that there is no dust on



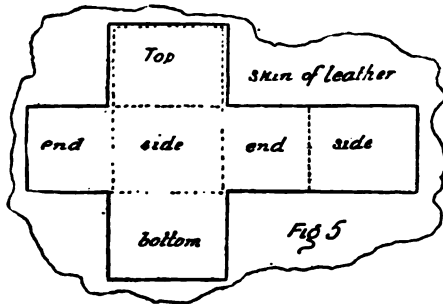
greater strain than any other method. The screws fastening hinges to lid should be 1-in. long at least, six of those No. 7 on list will do—they strengthen the lid at its weakest part—the screws through hinges into body of box will be six of the 3/4-in. named in list. The hinges should be let into the wood flush with surface, to make a neat job. The catches at front are 1 1/2-in. x 3/4-in. and cut out of thin spring brass, and holes drilled as per fig. 8—or they may be purchased at the photographic stores—they are screwed on as in fig. 4, and a small steel or brass pin, with head filed off, driven in nearly flush with the catch when box lid is closed down tight. Small hooks may be used in place of these spring catches, if desired.

the box and lay it in position on side on centre square, draw the other pieces in position—they should bend round corners at dotted lines—rub well into contact with wood, cut joints to meet with a sharp knife where they overlap. Lens hole and all others may be cut through with a sharp knife when dry. A neat leather handle may be purchased at the photographic stores, ready for fixing, or a piece of leather strap may be fastened by two or three round-headed screws on to lid, or a longer piece may be fastened at back and front as in fig. 6. The latter method takes all strain off the hinges and catches of lid, and is, perhaps the better plan.

The camera can now be placed in position and

secured by a short tripod screw, the head of which should not be more than $\frac{3}{8}$ -in. thick, and the shank $\frac{1}{2}$ -in. long.

Any shutter may be used by attaching a cord to the release spring and to a small bead outside camera, but the roller-blind pattern is by far the best, the release cord passed through a small hole at side and cord to set shutter passed through hole in bottom of camera as in fig. 6. The shutter should be firmly fixed on lens, or else be fast to the lens board, and lens screwed on to shutter. The pneumatic release may be used instead of cord, it is not liable to pull shutter off lens just at the critical moment of exposing plate.



If camera is to be used at fixed focus, a lens of not more than $\frac{5}{8}$ -in. focus must be used. The oblong hole in bottom of box would not be necessary in this case, and the length of box could be reduced by about $\frac{1}{2}$ -in. If a focussing hand-camera be desired, a 6-in. or $6\frac{1}{2}$ -in. lens would be better, and in the latter case a scale is needed. To make one, cut a slot in front of camera as at S in fig. 1. Take the remaining piece of brass (No. 6 on list), which should measure $1\frac{1}{2}$ -in. \times $\frac{1}{2}$ -in. \times $\frac{3}{8}$ thick, pass same through slot, and screw on to moveable frame of rack and pinion adjustment, then focus at say 5-10-15-20 and 25-feet, and mark on brass plate a line just where each of these measurements makes the brass plate protrude outside front of box, and mark distance on in plain figures. The plate is here shown in detail.

The etching of such a plate can be simply and neatly done. Scratch the distance marks very lightly at first, then dip the metal in melted paraffin wax until it is well coated. With a sharp, hard lead pencil or the point of a fine nail, scrape through the wax over the lines, and cut through it the distance figures. The whole may then be placed in a solution of perchloride of iron, say 1 oz. to 6 oz. water, though the strength is largely immaterial. This solution will eat away the metal where the wax has been scratched away.

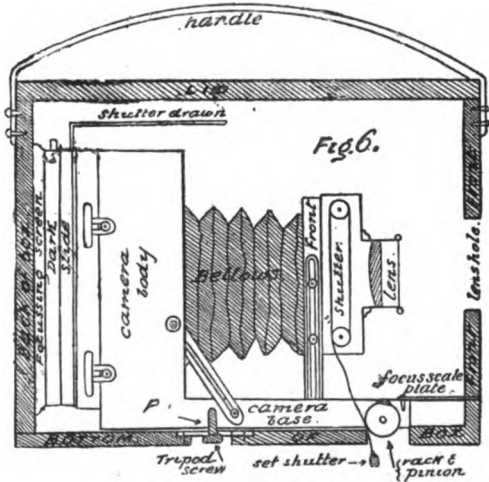
Extra slides may be carried at sides and on top of camera inside box. Do not be in a hurry to finish the work, it is sure to suffer. The method of jointing the woodwork is not altogether workmanlike, but dovetailing or groove jointing for the ordinary amateur camera maker is not always a satisfactory job. It needs a lot of care and practice to get all joints true, and it is quite unnecessary. However, those who prefer the dovetailing may do the work accordingly, but some of the measurements will have to be slightly altered.

Be sure, before you cut anything or fix anything, that you have all in right position. If your camera is of a different design to the one sketched, measure position for lens hole and all other holes and slots, etc., before cutting; they may not be in exactly the same position as those I have given measurements for.

One or two finders may be fixed at front, if desired; one of the upright, bi-convex view-meters, with slots to fix same on two sides of box, is as good as anything, and the camera is then used at a proper height from the ground, viz., about the height of your eyes.

The sliding parts of focussing adjustment of camera should be lubricated with powdered black lead to ensure easy working of same through slot in bottom of box. The reversing back of camera must always be upright before placing camera in box, so that when shutter of slide is drawn out it can be bent over on to top of camera and the lid closed; the focussing screen may be left on camera as fitted, provision having been made for this in the measurements given.

I have named American white wood in list of requirements, because it is cheap, easy to work, and very suitable for the purpose. Of course any



kind of wood may be used, even ordinary pine would do if no other is procurable.

The price of leather covering is purposely omitted from list, as many will not go to the expense of so finishing the box. A dead black or varnish black surface will only cost a few pence. Imitation leather may be purchased at considerably less than price given for skin, but I prefer the dead black to such, as it will stand more wear, and can be re-blacked very easily.

The box will make an excellent camera case to be used in place of the ordinary canvas bag; it will be sufficiently large to hold all the apparatus of the average amateur.

The method of working as hand-camera will be—open lid, set shutter, place plate-holder in position, and draw slide; close lid, expose plate, open lid and close and remove plate-holder.

Facts about Lenses.

(Continued.)

TO DETERMINE THE FOCAL LENGTH OF A LENS, WARNERKE'S METHOD.—Focus sharply the image of an object (distant about fifty times the approximate focal length of the lens), say a lamp-light upon a piece of white paper fixed to a wall. Measure the distance from the hood of the lens to the paper. Now turn the lens round and re-focus. Again measure the distance of the hood to the paper. Add these two distances together and divide by two. The product will be the approximate focal length of the lens. Say, first distance, 10-in.; second distance, 8-in. $10 + 8 = 18$. $\frac{18}{2} = 9$. Focal length of lens therefore = 9-ins.

More accurate is the following method:—Set up the camera and screw in the lens. See that the back and front are parallel and that the back is vertical. Focus the image of an object (so far distant that all beyond is perfectly sharp) in the centre of the screen. Mark the position (extension) of the back on the base board.

Now set up a foot rule and then focus an image of this in the centre of the screen. Make the image three inches long ($\frac{1}{3}$ size of the original). The back will have been racked out further than in the first case. Again mark the position of the back on the base board. Now measure the distance between the two marks. This distance multiplied by four gives the focal length of the lens.

If the camera racks from the front, the front should be fixed during the operations. On turning the focussing screw the back will move.

OPTICAL CENTRE.—Rack the camera in until the back is against the first mark. Place a rule on the top of the camera with one end in a line with the ground surface of the focussing screen, and the other over the lens. Measure a distance along the rule equal to the focal length of the lens. The point vertically under this on the axis of the lens is the optical centre of the lens, and may be marked on the lens mount if coming within it.

TO DETERMINE THE ANGULAR APERTURE.—This is a measure of relative rapidity of the lens, and is required for calculating exposures. Unscrew the combinations and measure the diameter of the fixed stop, preferably with a pair of calipers. Divide this into the focal length of the lens—the result is the angular aperture. Say the focal length is 8-ins., and the diameter of the stop is 1-in., $8 \div 1 = 8$. This number is always expressed as a fraction with f as the numerator thus, $f/8$. The angular aperture is a measure of the necessary exposure, as will be seen later; thus, a lens with an angular aperture of $f/8$ requires the same exposure as any other lens with an aperture of $f/8$, when working under the same conditions, irrespective of the fact that one lens may be large and the other small.

Sometimes it will be found that the diameter of the back or front combination is smaller than the fixed stop. In such a case the smallest opening should be taken.

The above method answers sufficiently accurately for small lenses, but in certain cases we have to take something different when we want to get a true idea of the rapidity.

Suppose that we have a double combination; the light passing through the front combination is condensed and therefore a larger amount passes through than the mere diameter of the stop would indicate. If we are using a single lens with the stop in front, then the diameter of the aperture may be taken. If, however, the stop is behind, then a correction has to be made owing to the condensation of light by the lens. If we are using a doublet lens and the opening of the diaphragm is not smaller than the lenses, the diameter of the front combination is taken. But if the stop or the back combination is smaller than the front combination, we focus the image of a distant object upon the screen, then remove the ground-glass and replace it with a sheet of card, in the centre of which a pin-hole is pierced. Take the camera into a darkened room and place behind the pin-hole a candle-flame. The front combination will be illuminated by a beam of light. On breathing on the front combination the diameter of the beam can be ascertained by measuring the illuminated portion, and this is the aperture from which calculations are made. The operation is repeated for each stop.

It is possible to avoid this operation by a simple calculation. We require to know the focal length of the front combination, the diameter of each stop, and the distance apart from the front lens.

Then the effective aperture is obtained in this way:—Multiply the focal length of the front lens by the diameter of the particular stop, and divide the product by the number obtained by subtracting the distance of the stop to front lens from the focal length of the front lens. Thus:—

Focal length of front lens ..	15-in.
Distance of stop to front lens ..	$1\frac{1}{2}$ -in.
Diameter of stop ..	2-in.

then $15 \times 2 = 30$. $30 \div 15 - 1\frac{1}{2} = \frac{30}{13\frac{1}{2}} = \frac{60}{27}$

$= \cdot 2$. So that we take $2\frac{2}{3}$ instead of 2 as the aperture of the lens with that particular stop.

In a single lens, with a stop *behind*, we proceed as if the front lenses were part of a combination. If we are using a triplet, then we take the diameter of the centre lens as the diameter of stop, and distance of this to the front combination as the distance of stop to lens.

RELATIVE EXPOSURES WITH VARIOUS DIAPHRAGMS.—Having obtained the diameter of the various diaphragms, and we wish to know the relative exposures with each, we may proceed as follows:—

Reduce all the diameters to fractions of one common denominator.

Square the numerators.

Divide the numerator for the largest diaphragm by all the others. The quotients will be the relative exposures compared with that particular diaphragm.

Thus, the diaphragm of a lens measures respectively, $1''$, $\frac{7}{8}''$, $\frac{3}{4}''$, $\frac{5}{16}''$, $\frac{3}{32}''$. Required the relative exposures taking the full aperture as unity (1)—the starting point. All the denominators 8, 16, 32, will convert to 32nds, and can then be compared.

$$\begin{array}{cccccc} 1'' & \frac{7}{8}'' & \frac{3}{4}'' & \frac{5}{16}'' & \frac{3}{32}'' \\ 32 & 28 & 20 & 14 & 5 \\ \hline & & 32 & & \end{array}$$

The denominator is now dispensed with and we have a series of numbers representing the proportionate diameters of the diaphragms.

These numbers are all squared and the quotients are the relative exposures. As these numbers are awkward to deal with we take the largest number to represent one (1), and obtain the proportions the other numbers bear to this by dividing them into it.

$$\begin{array}{l} 32^2 = 32 \times 32 = 1,024. \quad 28^2 = 28 \times 28 = 784 \\ 20^2 = 20 \times 20 = 400. \quad 14^2 = 14 \times 14 = 196 \\ 5^2 = 5 \times 5 = 25. \end{array}$$

Having squared all the numbers, divide the largest 1024 by each of the others in succession.
 $784 \div 1024 = 1.3$. $400 \div 1024 = 2.55$.
 $196 \div 1024 = 5.2$. $25 \div 1024 = 40.96$, practically 41.

The relative exposures to be given therefore are as—1 : 1.3, 2.55, 5.2, 41.

This method does not necessitate a knowledge of the focal length of the lens, and is thus limited in its usefulness, inasmuch as it does not enable us to compare an exposure with any other lens. To do this we must know the focal length of the lens, and express the diameter of the diaphragm as fractions of this quantity. The

method is perfectly simple, as explained under "angular aperture."

The relative exposures are directly proportional to the squares of the angular aperture while the relative rapidities are inversely proportional. Thus, in the case before taken, suppose that the lens was of 10-in. focal length, we get— $10 \div 1 = 10$. $10 \div \frac{7}{8} = 11.4$. $10 \div \frac{3}{4} = 16$. $10 \div \frac{5}{16} = 22.8$. $10 \div \frac{3}{32} = 64$; and these numbers are expressed as $f/10$, $f/11.4$, $f/16$, $f/22.8$, $f/64$. If these are squared and the square of the first taken as unity we obtain the relative exposures with the other apertures by dividing these squares by the square of the first, which works out 1, 1.3, 2.56, 5.19, 40.96. These are practically identical with the numbers obtained by the first calculation, as they should be. So that if with the first stop we gain one second exposure on a given subject, with the second we should require 1.3, or $1\frac{1}{4}$ second, and so on. By adopting this plan we can at once compare the exposures given with our lens and diaphragm with those given with another lens and diaphragm. All that we require to know is the angular apertures of the two diaphragms.

If we have a table of exposures based on the supposition that we are using $f/8$ (which is probably the most convenient plan), we can at once tell the exposures to be given with any other angular aperture, by dividing the square of that angular aperture by 64, the square of $f/8$, thus— $f/40$, $40^2 = 1,600$, $1,600 \div 64 = 25$, so that we should give 25 times the exposure with $f/40$; similarly with $f/4$, $4^2 = 16$, $16 \div 64 = \frac{1}{4}$; with $f/4$ we should give a quarter of the exposure.

(To be continued.)

A Plea for the Burette.

By C. F. TOWNSEND, F.C.S.

WE HAVE often been surprised at the persistence of the venerable ounce and dram measuring glasses. For small measures they are neither accurate nor convenient, and although they may be of service to the amateur who has no permanent dark room, we wonder at the professional still using them. The burette and pipette of the chemist are so much more convenient and, on the whole, less liable to breakage. Our ideal dark room (which we mean to fit up one of these days) will have burettes (figs. 1 and 2) suspended by iron or wooden clamps at the back or side of the sink. Behind them will be a slab of opal glass for convenience of reading. The first burette will be filled with pyro, the second with alkali, and the third with bromide. Another developer can be substituted for pyro, if required, or we can have an extra burette to contain it. If we do much enlarging work there is no reason why we should not have burettes for the iron and oxalate and another for the ten per cent. clearing acid. If the burette containing the iron be fitted with a cork at the top, the solution of ferrous

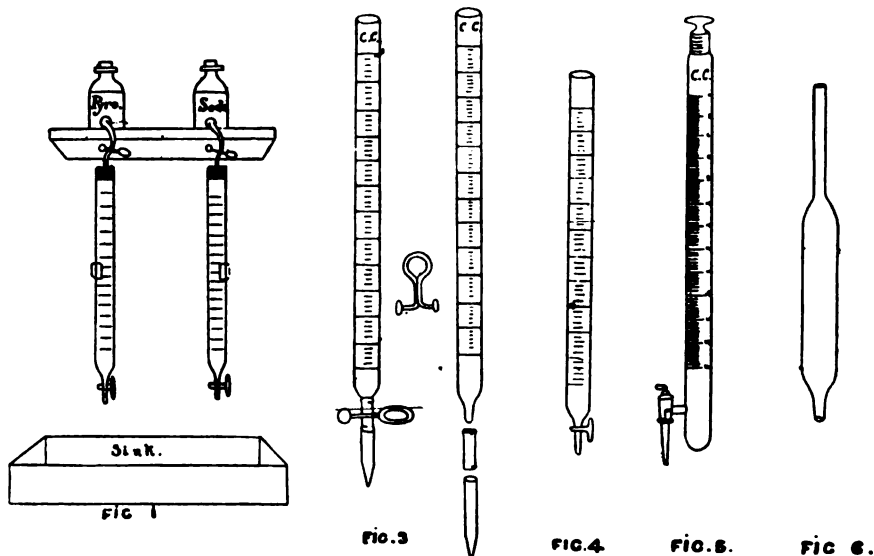
sulphate will be found to keep quite as well, if not better, than in a bottle. Each burette in regular use should have a funnel at the top, so that it can be filled easily from the stock bottle, kept preferably on a shelf above the burettes. A float in the burette is not to be despised. The level of the line on the float can be seen more accurately than the level of the liquid. The float has another advantage: it acts as a stopper, and liquids kept in a burette with a float hardly evaporate at all, and are only slowly oxidized by the air. By the way, in regard to oxidizable substances, such as sulphate of iron, pyrogalllic acid, etc., etc., when making up a fresh stock it is a good dodge to keep a number of small bottles, holding about two or three ounces, and to distribute the stock solution among them, instead of putting the whole into a large bottle. When they are filled and corked, a little paraffin wax can be melted in a dish, and the tops of the bottles can be sealed from the air completely by dipping them into it. In these small bottles, which can be opened as they are required, the solution will keep indefinitely; whereas with a

large bottle, fresh air is admitted every time the stopper is taken out, and as the contents diminish the air space and rapidity of deterioration of the solution increases.

The cheapest form of burette is that known as Mohr's (fig. 3). It consists of a long graduated tube drawn out to a nozzle at one end; over this nozzle is fitted a piece of india-rubber tubing, having a clamp in the middle for regulating the flow of liquid, and little glass delivery tube at the other end. Burettes (figs. 4 and 5) are made also with a glass stop-cock instead of the rubber tube

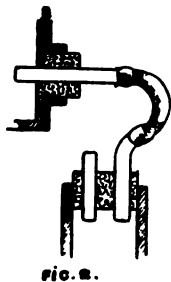
many plate-makers are a disgrace to those who are responsible for them and an insult to the intelligence of their clients. For small measures burettes are very convenient, as minims can be measured to a drop, which is certainly not possible with a cylindrical measuring glass. The size of a drop, by the way, varies a good deal with the size and shape of the nozzle from which it drips, but, on the average, it may be taken as half a tenth of a cubic centimetre or three-quarters of a minim.

For some purposes pipettes will be found very



and clamp, but there is no particular advantage in using them. When the rubber gets worn out, it can be replaced without any difficulty and a few extra clamps can be kept in case of breakages, which happen very seldom.

Burettes can be purchased graduated in ounces, drams, or minims, or in cubic centimetres, as required. In regard to this, what a pity it is



that photographers still keep to the cumbersome and antiquated measures of the pharmacist! The amount of labor and worry that can be saved by the metric system is incalculable. The complicated formulæ for development still given by

useful in addition to burettes. There are two kinds of pipettes, one delivering a fixed quantity, and the other graduated all the way down like a burette. They will be found particularly useful for solutions that are only used occasionally, and for measuring small quantities they are more accurate even than burettes. If they can be obtained, it is better to get burettes and pipettes enamelled at the back, as they are so much easier to read, especially if no float is used. Some burettes are made with a longitudinal blue line in the enamel; the blue line appears to be divided at the level of the liquid into two portions which meet in a point.

In conclusion, we feel quite sure that anyone who exchanges his measuring glasses for burettes and pipettes will never regret it. The work will proceed much quicker; there will be no glasses to be knocked over in the dark; no plates and paper will be spoilt through several solutions being measured out of the same (unwashed) glass; the dark room will be free from bad words, and, as it will be purged of glasses and bottles, there will be much more space available. If, at the same time, the metric system be substituted for 437½ grains—one avoirdupois ounce; 480 grains—one apothecaries' ditto; with the rest of the drams, scruples, and minim business, hair-restorers will be at a discount.

In Natural Colors.

A WONDERFUL process is described in outline by Capt. Colson, who is working on the old lines of "direct" color photography. He says that he uses a gelatino-chloride paper, preferably the latter, exposing it to sunlight until it becomes chocolate in color. This is done without any negative in front of it. The paper thus discolored is placed under a colored transparency, and again exposed to sunlight for a considerable time. For a little while the paper becomes gradually darker, but with longer exposure this clears until the colors of the transparency are approximately reproduced, though in a dull style and with the high-lights very dull and muddy, but by damping the print, and again exposing it for a short time, the whites may be cleared up. A better method is said to be to wash the paper for two or three minutes before exposing. Then, after drying, proceed as suggested above, when the exposure will be longer, but colors will be more perfect. The fixing is done by means of an ordinary ink composed of iron acted upon by gallic acid. A sheet of blotting paper is thoroughly saturated with the ink, thoroughly dried, and then placed in contact with the colored print under slight pressure for a couple of days, which makes the picture practically permanent. For these particulars we are indebted to *Photography* and its correspondent, Capt. Colson. The process seems very much too good to be true.

The controversy between J. W. McDonough and Dr. Joly, which promised to lead to serious litigation, has been settled, according to the *New York World*, in a somewhat peculiar but satisfactory manner. The capitalists who were financing McDonough, suggested that the rival claims should be settled by the experts of the American Patent Office, the inventor whose patent was declared valid should have an interest in the company working the color-process, while the unsuccessful man should have a substantial consolation prize in the shape of a sum of money. The patent was awarded to McDonough.

The *World* further says:—"Ten days ago a lawyer appeared in Richmond, Va., and as a result the Natural Color Photographing and Printing Company was incorporated under the laws of Virginia. So well was his work done that none of the names of the men interested appeared.

"The corporation got a charter and \$500,000 capital was provided for, with permission to increase to \$5,000,000. Yesterday the secret became public. Spencer D. Schuyler, head of the New York office of the Maxim Powder and Torpedo Company, No. 43 Wall-street, and E. M. Dickerson, a wealthy lawyer and amateur photographer, of No. 253 Broadway, are the backers of the company that expects to revolutionise the art of portrait and commercial photography.

"What to call the new art was a hard question. The inventor wanted it named the McDonotype. The capitalists would not hear of it. As yet it is simply the McDonough process.

"Mr. Schuyler was utterly astonished that news of the invention had become public. At first he declined to discuss the corporation's plans. He

had hoped, he said, to give a public exhibition in two months.

"'Had not *The World* already a description of the process,' said he, 'I should refuse to discuss it. Things are still in a crude shape. Our company has no officers, and we are not yet ready to do business.'

"'Of course color photography is just in its beginning. Much is yet to be done. But our results are proof of what can be attained. Even now we have taken 500 color photographs, perfect in every detail of tint as well as outline. Anything can be photographed in all its natural colors with all the delicate tints of life.'

"The crowning achievement thus far is a photograph of a Japanese panel. It contained seventeen distinct shades, but the colored photogram brought out every one. Mr. Schuyler also has two photograms of the inventor, Mr. McDonough. They show perfectly the flesh tints of the face, and the exact color of the cravat, to say nothing of all the other little details of his attire.

"'Our plan had been,' said Mr. Schuyler, 'to notify the press to send representatives when we were ready to make public our process. We proposed to take a photogram of each in colors as the best proof of what has been accomplished.'

The color-screens are easily and cheaply prepared. Inexpensive machinery does the delicate ruling required, and as for the paper it needs no special manufacturing.

Mr. J. Wallace Bennetto's claims still occupy the people at Newquay, and a rather curious test of his ability has been made. A party of gentlemen, including an artist, but, apparently, not including a photographer, went to Mr. Bennetto's studio, blindfolded the operator, and induced him to photograph a picture which he had not seen. After the operation, and before his eyes were uncovered the picture was wrapped up and sealed, so that he could not see it, until he had shown the reproduction, and the committee reports that "he then showed a transparency on glass. The exposure had been made in perfect ignorance of the subject, and the focus was not correct; under these circumstances we consider that the result represented the colors of the picture sufficiently to prove that Mr. Bennetto can produce colors by photography in a transparency on glass. We are satisfied that the result was obtained *bona fide* by photography alone."

G. R. Baker, who is well-known as a lanternist and a writer in *The British Journal of Photography* compares Mr. Bennetto's results with those of Lippmann and Ives, and says "the projections of Mr. Bennetto (as single slides shown by direct light) are a distinct advance on anything I have seen or know of, and accepting his assurance that no stains, dyes, or pigments are used, but the transparencies are produced photographically, I consider he has made a valuable addition to photography."

A representative of the *Western Daily Mercury* has interviewed Mr. Bennetto, and writes as follows in his paper of October 8th. "He told me that although sure of his ground, he feels he can make improvements, and that until the whole

thing is as perfect as he can make it, no patents will be sought. Not unnaturally I asked why he did not take a provisional patent to protect himself whilst working. To this Mr. Bennetto answered that in order to secure it he would have to deposit at the Patent Office such particulars as would enable a photographer to understand the process sufficiently to secure similar results. This, he said, would mean the employment of ability and capital with the idea of effecting some slight difference in the process, in order to obtain from the Patent Office a protection, on the ground that the change was really an improvement. Mr. Bennetto uses plates he makes, and their preparation includes immersion in a chemical solution known only to himself. It was possible to employ one of the least-known plates on the market after bathing it in the solution, but the results then given are not so fine. When Mr. Bennetto takes the negative from what he describes as a comparatively simple camera, it shows no trace of color. Only by the action of certain chemicals are the colors secured. Although his negatives did not show color, he could produce the natural colors upon them.

"I took my first successful picture in the early part of last year," said Mr. Bennetto, "and the result pleased me beyond imagination. From that time onward I continued to take sunrises, sunsets, rocks and pools, fruit, flowers, portraits, and other things. Last Christmas I was satisfied that I could transfer the pictures, with all their colors undimmed, to paper, and then I resolved to devote my time to simplifying my methods and producing faultless slides for lanterns. My intention is to go on with the work, and make the process thoroughly practical. If I carry out the improvements to my satisfaction, I shall patent the whole thing, and place it on the market. Already I have had offers of three very large sums for the process. I can assure you that all the pictures are produced merely by the aid of light and chemistry. No pigments, paints, or dyes are used, and they are not touched by either brush or pencil.

"Six of the seven pictures I saw were on sheets of glass four inches by three. These were the slides. The pictures were projected on a screen of white cardboard. First I saw that in which a

couple of hyacinths in bloom are arranged with a few apples, an orange, and the body of a cock pheasant. On the screen it made a capital picture. The colors were exquisitely produced. Looking into the camera, after the removal of the lens I had a close view of the slide under a strong light, and nothing could be seen to show that the picture was not secured by photography. Next came a study of pools, rocks covered with mussels, and a sunlit cliff. The third of the series was a group of objects, which included a champagne bottle, grapes, a melon, fruit knife, and small hand mirror. In this color was reflected upon color and the delicate hues were strikingly caught. The three pictures named were each photographed in from three to three-and-a-half minutes. Shorter exposures were given the others I saw, the outdoor subjects being secured in fourteen to sixteen seconds each, and the portrait in forty seconds.

"A sunrise, taken one summer morning, made the most charming picture on the screen. The sun is hidden by a dark cloud, but behind this are seen the shooting rays of light, whilst the sky is bathed with a ruddy glow. The wet sand and the quiet sea catch the bright reflection here and there. Those who scout the bare mention of color photography state that these pictures are secured by painting, and add that Mr. Bennetto in his youthful days was clever with the brush and pencil on photographs.

"I gathered that the process was not an expensive one, though the productions would not be ridiculously cheap. At a guinea each good lantern slides could be sold.

"Mr. Bennetto says his promised exhibition and lecture have been delayed by the business he still has to depend upon. Mr. Bennetto is a Cornishman, having been born at Blue Anchor. He spent fourteen years in photographic businesses in London, and from there went to manage a business in Dublin, from which place he came to Newquay five years ago on account of ill-health."

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Some Gems of '96 which were unfortunately crowded out of our ANNUAL are given in these pages, and one or two further examples which we cannot possibly include are held over for next month.—Eds.



THE THAMES.

By Frederick A. Grew.



THE PYRAMID OF MEYDÛM.

Pall Mall, 196.

By Dr. Page May.

Crowded out of our Annual.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention THE PHOTOGRAM.

New Advertisers.

Cadett & Neall, Ashstead.
The Photographic Salon, Piccadilly.
Vincent & Blaikley, Barbican, E.C.
The Bristol Photographic Exhibition, Bristol.
The Polytechnic, Regent-street, W.
The Anglo-American Photo-Import Office, Paris.
James Woolley, Sons & Co., Ltd., Manchester.
Science Sightings, Fleet-street, E.C.

New Goods, etc., Advertised.

The De Bedts Kinetograph. The Anglo-American Photo-Import Office.
X-Ray Induction Coils. James Woolley, Sons & Co., Ltd.
Photo Process Engraving Instruction. The Polytechnic.
Half-Tone and Line Engraving, etc. Vincent & Blaikley.
Photographic Exhibition. The Salon.
Photographic Exhibition. The Bristol International.
The Carlton Studio Camera. Watkinson & Co.
The S.W. Lantern Plate. The Sandell Works Co., Ltd.
The Frena Camera. R. & J. Beck, Ltd.
Hand-Camera Lenses. Ross & Co.
The Cadett Plates. Cadett & Neall.
Christmas Mounts. George Houghton & Son.

Novelties.

MATERIALS.

The "Pocket" Camera, for plates size $1\frac{1}{2} \times 2\frac{1}{2}$ in. ($\frac{1}{4}$ of $\frac{1}{2}$ -plate). Price 18s. 9d., including six double dry-plate holders. Spiers & Pond, Ltd., Queen Victoria-street, E.C.

Plate-cutting Gauge. To cut a $\frac{1}{4}$ -plate into four equal parts, for use in the "Pocket" Camera. Price 1s. 2d. Spiers & Pond, Ltd.

The "Etincelle" Flash or Continuous Magnesium Lamp. Price: No. 1 (cylindrical), 7s. 6d.; No. 2 (rectangular), 8s. 9d. English Agents—Spiers & Pond, Photographic Dept., Queen Victoria-street, London, E.C.

The Lumière Orthochromatic Dry Plates. Price: $\frac{1}{4}$ -plate, extra rapid, 1s. 6d., series A. and B. 1s. 8d., series C. 1s. 10d.; $\frac{1}{2}$ -plate, 3s. 4d., 3s. 9d., 4s. 2d.; whole-plate, 6s. 6d., 7s. 6d., 8s. 6d., per dozen. Fuerst Bros., 17 Philpot-lane, London, E.C.

Perken, Son & Rayment advise us that their lease of the premises of their Oxford-street branch having lapsed by effluxion of time, business will be transacted from their headquarters, 99 Hatton-garden, E.C.

A New X-ray Tube of great promise has been placed on the market by A. C. Cossor. Its novelty in arrangement consists of using two concave cathodes focussing on to one sheet of platinum attached to the anode and placed diagonally between the cathodes. We hope to give a diagram next month, and also report of a comparative test against other tubes.

Matthews' Patent Portable Lantern has been modified in several minor respects, and made even more perfect than it was when first placed upon the market. The extremely simple and ingenious arrangement for slide-changing and dissolving can now be supplied separately for fitting to other lanterns. It has a most extremely convenient carrier, and can be fitted to any open flange lantern. We understand that the lantern will also be very shortly supplied with acetylene burner and generator complete.

Bargains in lantern apparatus of the best possible quality are just now obtainable, owing to the relinquishing

of the business of D. Noakes & Son, of Greenwich. We hear that Mr. Noakes is retiring from lantern-making, in order to take over the business of his late father, but we can scarcely believe that the lantern business, which has been so successfully carried on by him, will not be taken over by someone as a going concern. At any rate the stock is now being offered at clearance prices, and those who are wanting such apparatus will get the advantage if they enquire into the matter at once.

The Incanto Portrait Apparatus, for producing portraits by artificial light of acetylene gas, will prove a boon to many photographers whose resources are not great, for the amateur set costs only £3 15s., while the professional set costs £5 15s. It is stated that with a professional set, using rapid plates and portrait lens, working at $f/8$, the exposure is about four seconds, but the list does not say what space is sufficiently illuminated to work with this exposure; and we should suggest that a third and more powerful apparatus be offered to the profession, since it will not be difficult to make such an apparatus at a price professionals would very willingly pay.

Adamson's Incandescent Studio Light has been greatly modified during the summer time, with the result that the apparatus can be supplied during the present season at very appreciably lower prices than has hitherto been possible. In addition to the pendant form of apparatus, which we illustrated a couple of years ago, a very convenient stand or portable form has been arranged, which, although announced last year, is only now ready for the market, and in stock. The pendant light, capable of equally illuminating a background twelve feet square, is now priced at £50, while the small portable form, giving exceedingly short exposures with three-quarter lengths and busts, only costs £25.

Wheel Print Trimmers are by no means new, and those who have ever used a thoroughly good wheel trimmer would hardly care to return to the use of the knife. A new and patent pattern, just placed upon the market by H. Jasper Redfern, of Surrey-street, Sheffield, has more than one very distinct advantage. The small axle or pin, which was one of the weakest points of the old wheel trimmer, is replaced by a stout screw bearing, and the cutting wheel itself is made in the form of a saucer, so that it may be easily sharpened to a keen edge by rubbing it upon a flat oil stone. Our fortnight's experience with this new pattern makes us predict that the old trimming knife will probably cease to be used by photographers.

One of the neatest and most compact magnesium lamps is the "Etincelle," a French innovation introduced by Spiers and Pond. No. 1 is cylindrical in form, and is quite large enough for ordinary portrait work; but for large portraits and for interiors or groups, the rectangular pattern, No. 2, is far preferable. It is extremely compact, No. 2 being about $2\frac{1}{2} \times 1\frac{1}{2}$ in., by about $2\frac{1}{2}$ in. high. The magnesium powder is fed into an aperture in the base of the lamp, and a pressure on the bulb will produce a short or prolonged flash (up to ten seconds) at will. The base is heavy, and the entire apparatus is thoroughly efficient and not liable to damage. It is well-made in nickel-plated brass, and will be found especially serviceable during the dull days of winter.

The Christmas Cards of George Houghton & Son are this year a distinct speciality, and they have devoted to them a separate special catalogue of twelve pages with many illustrations, for which it will be well for our readers to make application, enclosing a stamp for postage. The designs are so numerous that it is scarcely possible to give any idea of the leading features. Every taste seems to have been catered for, with mounts from the simple grey cut out with a Christmas greeting in gold, to those with elaborate chromo-lithography, jewellery and embossing. Evidently the dealers have plenty of faith in the Christmas card uses

of photogr. phy. We hope that the same faith is shared by our readers sufficiently to induce them to make our Christmas Card Competition a good one.

The Lumiere Orthochromatic Dry Plates have been received for trial by us from Fuerst Brothers. They require careful treatment, being sensitive to yellow and red light, and the makers request the boxes be opened in faint green light only. They are made in a great many sizes, from $4\frac{1}{2} \times 3\frac{1}{2}$ upwards, in three grades, extra rapid, Series A and B, and Series C. Series B, which we have at hand is recommended for reproduction of paintings, stained glass, windows, colored materials, etc. Two formulæ are given for development, amidol and pyro-soda, and, after fixation, the plates should be washed and placed in an ordinary alum solution for five or ten minutes. They require very thorough washing to eliminate the hypo. Great stress is laid on the use of the green light during development, that the dish should be kept covered, and as far as possible from the light. These plates are strongly recommended for Röntgen ray work, and we shall take an early opportunity to test them.

There has been a growing demand during the past summer for a really well-finished camera to accommodate a small plate—preferably a fraction of some popular size. Spiers & Pond's manager has shewn us the very thing to fill this want to the letter. It is a thoroughly well-made and efficient instrument, designed for a plate the size of one-fourth of a quarter-plate. It is made of well-seasoned mahogany, covered in Russia leather; fitted with two rectangular view-finders, and a time and instantaneous shutter. The lens has excellent definition and admits a well-illuminated image. There is a movable focussing

screen, for use by those who wish to see the full-size composition of a picture before exposure, although the lens is, of course, a fixed focus. Six double dry-plate holders in vulcanite and aluminium accompany the camera, and "sovereign" plates are supplied at two dozen for a shilling. For the convenience of customers desiring to cut their own plates, a cutting gauge has been designed in which, by two cuts, a quarter-plate can be equally quartered without fear of loss. Altogether it is a charming little instrument, and well worthy of a large sale.

CATALOGUES.

WORMALD'S SPECIALTIES, including lantern masks, varnishes, intensifiers, etc., are listed in a new catalogue from Wood Bros., of Liverpool.

BAIRD & TATLOCK'S Supplement No. 2, lists a variety of chemical apparatus. That which is most interesting to ourselves being the focus tubes, fluorescent screens, induction coils, etc., for radiographic work.

RADIOGRAPHIC APPARATUS, including fluorescent screens and special tube holders, is listed by A. Hurst & Co., and the list is illustrated by a couple of excellent radiograms, including one of the arms, shoulders, and the whole of the upper trunk, made with an exposure of twelve minutes.

THE INCANTO Acetylene Generators are described in a list from Thorn & Hoddle. This firm certainly deserve success from the enterprise it has shown and the rapidity with which it has adapted the new light to many purposes. We note that the Incanto has received the silver medal of the Royal Cornwall Exhibition for the present year, and also that its manufacturers are first to place on the market complete apparatus for portraiture.

Exhibitions and Competitions.

These particulars are given when the Exhibition is first announced, and again when it is time for entries to close. The Secretaries' names are only given when the Exhibitions are open to receive work.

No. of Exhibition.	DATES.			Prizes.	Open Classes.	Address of Secretary.
	Entries.	Pictures.	Exhibition.			
1. Leicester Photographic Exhibition	Nov. 7.	Nov. 7.	Nov. 24 to 26	S. B.	One.	T. Brown, 68 Church Gate, Leicester.
2. Southport Photographic Club ...			Oct. 26 to 31.	Frena Hand-Camera.		Austin Edwards, Willoughby-lane, Park, Tottenham.
3. Austin Edwards...		3rd of each month.		Cash.	All.	9 Carthusian-street, E.C.
4. Magic Lantern Journal Slide Competition ...	Oct. 31.			Cash.	A.	6 Fetter-lane, E.C.
5. Hearth & Home...		Nov. 12.		S.B.C.	5 A.	2 Tilney-street, Orrell-park, Aintree, Liverpool.
6. Aintree Photographic Society ...	Nov. 12.		Dec. 4-5.	G.S.B.	Eight.	W. D. Welford, 57 Chancery-lane, E.C.
7. Stanley Show ...	Nov. 9.	Nov. 13-14	Nov. 20 to 28	G.S.B.C.	4 Open, 5 Members Only.	W. Fenton-Jones, 12 King Edward-road, Hackney.
8. Hackney Photographic Society ...		Nov. 14.	Nov. 17, 18, 19 & 20.			M. Lavington, 20 Berkeley-sq., Clifton.
9. Bristol International ...	Nov. 1.	Dec. 1.	Dec. 14 to Jan. 13.			
10. Dulwich Photographic Society ...			Nov. 12.			
11. Photography Ann. Lantern Slide Competition ...		Oct. 31.		S.B.C.	9 Open, 1 A.	Photography, Coventry.
12. Hove Camera Club ...	Nov. 10.	Nov. 7.	Nov. 19, 20, and 21.	S.B.C.	Three.	E. E. Manwaring, 73 Landsdowne-place, Hove.

A—Amateur. P—Professional. G—Gold Medal. S—Silver Medal. B—Bronze Medal. C—Certificate.
Cm—Complimentary Medals given to every exhibitor whose work is hung.

A Winter Advertisement.—Our woven wire door-mats, into which are worked the words "Read THE PHOTOGRAM," have proved exceedingly useful to our agents and their customers. We supply them below wholesale price of the plain mats; we have proved, at the foot of our own staircase, their wonderful durability and

cleanliness, and one of our agents who has used it for a year says, "the mat is a rare good line. I am just having a new place built, and I must get you to make me a special mat, to fit the doorway." Particulars gladly given to photographers or our agents.

Current Topics

Photographic Snowballs grow as they roll.

Rules for our photographic Christmas-card competition were given in February and in September.

The Lantern Slide Exchange Club has appointed as secretary, J. S. Walker, Mutley House, Plymouth.

CeramicENAMELS have always been highly appreciated by The Queen, and Her Majesty has just given a commission for such work to Alex. Fisher, the Warwick Studios, Kensington.

Special attention is called to "Photographic Snowballs" in our advertising columns. Those who can send us even three or four names of photographers not already on our list will win our thanks even if they do not care for the other possible winnings.

Interesting Lantern Slides for loan to schools, evening classes, etc., have been prepared by George Newnes, Limited, in consequence of the success of their similar sets last year. The current year's subjects are "Behind the Scenes of Popular Journalism," and "Popular Authors and their Work."

Decorative Photography.—The West Surrey Photographic Society offers a prize of £2 2s. for the best design to be printed on the outer covers of the society's prospectus and notices. The competition is only open to members of the society, but the idea seems good enough to be followed by others.

The Convention Balance Sheet.—In spite of a liberal donation to the Traill Taylor Memorial Fund, and several other unusual expenses during the current year, the Photographic Convention shows a balance on account of £61 13s. 9d., as compared with £27 9s., at the beginning of the year. This is in addition to the £100 reserved fund.

We hope our readers have not forgotten our Christmas Card Competition, full particulars of which were given in our February issue, page 39, but are now preparing prints to fit spaces indicated. As photographic Christmas cards are so fashionable this year, we expect most of readers will have already commenced making prints, therefore it will be a small matter to find three for our competition, and we are in hopes of this one beating the record.

The great Exhibitions need not be described here at any length, since they are fully reviewed and illustrated in PHOTOGRAMS of '96. Both report considerably increased entries—and increased rejections, due to a determination to raise the standard of accepted works. Both exhibitions have had phenomenal attendances, and especially the Pall Mall show, which has added the attractions of radiography and the cinematograph to those of the mere dead pictures on the walls and apparatus on the tables.

The Lantern Society, that society which has held the most comfortable and enjoyable meetings of any society in London, is threatened with extinction from lack of interest amongst the members. It has been found that there is no great difficulty in obtaining large audiences to enjoy the very fine entertainments that have been provided by the society, but the hope that those who attended the meetings would be induced to become members, has scarcely been fulfilled. It will be a distinct loss if the society is allowed to lapse, and we trust that the required guarantee may be forthcoming.

The N.A.P.P.—The annual meeting was held in London on September 28th, with W. Barry (Hull) in the chair, and a good attendance of provincial members. Suggested changes in the management of the association were fully discussed, and finally a resolution was passed—"That this association has done good service to the professional photographers, and it is now advised to continue it in the same purpose and with an increase of the social element." It was arranged that the summer meeting should be held at Worcester early in June, to which ladies should be specially invited.

Psychic Photography has been somewhat extensively treated in the issues of *Light*, during September. The articles are illustrated by several reproductions of psychic photographs taken during seances with David Duguid, within the last few weeks. Also a society for psychic investigation has been formed in Birmingham, under the title of The Spiritual Evidence Society. The secretary is C. Burton, 11 County-chambers, Corporation-street, Birmingham. The society has been vigorously attacked by Dr. Hall-Edwards, W. Tylar, and several other correspondents of the Birmingham papers.

X-rays, Electric Light, and Glow-Worms.—At the British Association meeting, Prof. Sylvanus P. Thompson, F.R.S., said that an arc light could send through a deal board, but not through aluminium, radiations, invisible to the eye, but which would cast a shadow of an obstacle on a photographic plate. When trying to shorten the exposure to X-rays, he found that calcium sulphide gave off radiation after retention in a dark room for six weeks, and most likely the fogging of plates backed with fluorescent materials was due to such radiation. He had experimented on the new radiation discovered by M. Becquerel, which is given off by fluorescent substances, after exposure to light. This radiation passes through aluminium and other opaque substances, and discharges electrified bodies. Its passage through metals is relatively more easy than that of X-rays. These rays possess various degrees of refrangibility, and are polarizable and can be reflected, so that they are transverse ether vibrations. Professor Thompson had found that cathode rays falling on uranium give rise to a more intense radiation of X-rays than when they fell on platinum. Further, the absorption co-efficients of substances are not the same for the Becquerel rays as for X-rays, and the author stated that the light of a glow-worm had been found to pass through aluminium.

Sir G. Stokes said he associated the effects obtained by Becquerel and Prof. Thompson with Tyndall's phenomena of calorescence. They seemed to resemble the effects produced when slow oscillations pass along a suspended chain and give rise to a sudden and rapid motion at the end of the chain. He supposed Lenard's effects to be explained by assuming a stream of moving particles to strike one side of the aluminium window, and after the impulse had traversed the aluminium it might give rise to a more rapid or less rapid disturbance.

Professor Lenard said that he could not accept this explanation, as the deflectability of the cathode rays by a magnet is unaffected by the window.

Dr. Dawson Turner stated that he had tried to repeat the experiments on the transparency of aluminium to the light of the glow-worm. He experienced a difficulty in getting the insects to glow when under experiment, but he found that they gave off the radiation whether visibly glowing or not.

The Winter Session is now in full swing, and fixture cards are, or should be, full, yet a few suggestions may be useful. We may well enquire whether photographic societies do all they ought to do for the general public, from whom they recruit their members. Most other literary and scientific societies have a series of meetings to which they admit the public; and for which they generally issue serial tickets, as well as tickets for single admissions. Surely every photographic society should do the same. To take a small public hall, arrange a thoroughly attractive lecture or demonstration every month through the winter, and make the public pay the whole of the expenses is no very great task for a wide-awake society. A good lecture-demonstration on radiography (where it has not been seen); a lantern-demonstration evening, with stereoscopic lantern projection, and the kinetoscope; and lecture (which might be by one of the members, and with slides contributed by the rest) on the pleasures, advantages and applications of photography; and two or three lantern-lectures by such men as Muybridge, Paul Lange, G. E. Thompson, Gambier Bolton, Lamond Howie, and others, would make a most attractive programme. With careful working, a season ticket at five shillings for the six lectures should handsomely clear the expenses and provide free admission for the members of the society. The serial ticket system saves an immense amount of risk, and labor and expense. If the actual expenses are guaranteed by members volunteering responsibility for the sale of a certain number of tickets, the secretary and treasurer are immensely relieved, and success is assured. Such a system is invaluable in bringing a society before its proper supporters.

As to the duties of societies to themselves, we think every possible effort should be made to develop the resources of the members, to encourage the members, and especially the young, to read papers, shew their results and join in discussion. Too much reliance on trade demonstrators, affiliation lectures, and sets of lantern slides sent round by the various journals has sapped the life of many a society.

Finally, as to the duties of a society to its lecturers and demonstrators. Two examples will suffice. One society asked us to lecture, at a distance which involved two train journeys and a tram-ride to cover a few miles. For the comfort of the lecturer the president of the society called at the office with a hired carriage, and the same vehicle was at our disposal for return. At the hall, refreshment was provided, the officers were introduced to the lecturer, a gentleman of position took the chair, and the hall was filled with an educated and appreciative audience. At another

society, how different. After a long train-ride we arrived ten minutes before the time for opening the meeting, to find the hall locked, and a few boys hanging round the door. About commencement time the secretary arrived, half-an-hour later the room was crowded with people who had paid sixpence for admission. After the lecture a formal vote of thanks, and we were allowed to turn out into the streets for a cup of coffee and to find our own way to a strange railway station. Too many societies treat their visitors in somewhat such a style, and one is apt to wonder why a man who is worth inviting to lecture should be asked to put up with discomfort from 3.30 p.m. until past midnight, to spend time in advance preparing a subject, to pay his own railway fare, and give his services for a society which has not the courtesy to meet a stranger coming to the town or to offer him modest refreshment before he leaves. The Rev. F. C. Lambert recently related some sad experiences in this line, and he is by no means alone. The whole subject is worth the attention of the committees who are now arranging their winter programmes.

The Photographer's Copyright Union held its annual meeting at the close of its third year of work, on October 8th. Frank Bishop, the president, was in the chair, and there was a fair attendance of both London and provincial members. In his opening speech the chairman bitterly regretted that the number of members was still comparatively small, but felt sure that this could only be put down to misconception, especially on the part of the provincial members, some of whom he feared had the idea that the Union was formed to benefit a few London workers. From the very first the Union had been anxious to benefit provincial men, and, as a matter of fact, at the present time four-fifths of the business was provincial. He referred to rule 23 which, he said, had been objected to by certain of the photographic press as being a "cast-iron law." He was aware that Mr. Snowden Ward would object to the position of the council on the matter, but they still felt that the only path of safety was rigid adherence to rule 23. He said that it was argued, and especially by provincial men, that in certain cases if they were prevented from giving permission to reproduce without charge, a competing man would gladly supply on these terms and would obtain a good advertisement, which might be worth more than a minimum fee of 10s. 6d. This idea the speaker condemned as ruinous. He said that the newspapers did not reproduce a photograph because it cost nothing, but because it was of interest to their readers; and if an editor wanted to reproduce a given work of a given man, he would not be put off with a different work by another man, simply because the latter was willing to do something for nothing. He wished it to be clearly understood by the provincial men that the Union was prepared to support any man whose work was pirated, and to fight the pirate; that the Union solicitors, as experts in copyright matters, were much better able to deal with them than general practising solicitors, who can be employed in provincial towns. He would also point out that if a case was taken into Court by the Union, and the result was unsuccessful to their client, the Union was prepared to pay half the cost. Among the minor advantages, but one which by no means should be overlooked, was the issue of registration forms and transfer copyright forms, which prevented a man losing his rights through inadvertence. It had been proposed by Mr. Alfred Ellis that the Union should approach the Stationers' Company with a view to obtaining a sliding scale of charges for registration in the case of photographers who registered a considerable number of copyrights.

The Secretary's report, showing that the Union had done exceedingly good work during the year, was read, and the two retiring members of the committee, namely, Alfred Ellis and J. Lillie Mitchell, were both unanimously re-elected.

Alexander Mackie asked if members of the committee invariably adhered to rule 23. In his own case, as specialist in the photography of British Museum antiquities, etc., there were certain cases where the granting of permission to reproduce without fee (say as frontispiece to a book), was of immense direct value to him in the way of publicity. He thoroughly agreed with the principles of the Union, and had supported it heartily, but felt that if the rule 23 must be absolutely binding in all cases he would be obliged to resign his membership. He had heard it suggested that certain members of the council made occasional exceptions to the rule. Alfred Ellis demanded the names of those who were charged by Mr. Mackie with breaking the rule. Mr. Mackie replied that he had not charged anyone, nor would he be justified in giving the source of the statement which he had heard and reported. Mr. Ellis then said that the rule was binding on the committee, and that though he could not answer for other members he could answer for himself that he had never broken it, and he believed that no other member of the committee had done so. J. Lillie Mitchell (of the London Stereoscopic Co.), William Grove (for Window

and Grove), and W. Downey (for W. & D. Downey), answered that in their own cases no infringement of the rule had taken place, and gave instances in which strict adherence to it had been of great value to them.

A member asked whether in the case of a picture being supplied to a journal, which the photographer valued the right of reproduction at £5 5s., and also valued the paragraph advertisement that he would receive at the same sum, he would be entitled to consider it a contra account. There seemed some doubt as to whether this should be done in the case of a literary paragraph, but if the advertisement were in the regular advertising columns and charged at a published scale rate, the council could see no objection to such a *quid pro quo*.

H. H. Hay Cameron moved the adoption of the report, which was carried on the seconding of Mr. Mendelssohn.

Alfred Ellis, speaking for the report, urged the value of form A of the Union, and the importance of registering the copyright of anything for which it was worth while to give a free sitting.

Emphasising the importance of securing provincial members, the President said that he wished to suggest the addition of Mr. Frank M. Sutcliffe (of Whitby), and Mr. McGrath (Guy & Co., Cork), to the council. Mr. Winter (of Mawson & Swan) said it was most important that the provinces should be well represented, as there was undoubtedly, not only in photography, but also in many other learned pursuits, a tendency for the provincial men to suspect the Londoners of attempting to keep a close co-operation. On his proposal, seconded by Mr. Thompson, the gentlemen suggested were elected.

Alfred Ellis proposed and T. Birtles (Warrington), seconded the election of Warwick Brooks, which was carried. In speaking of this proposal, Mr. Birtles said that he had had many wrong ideas with regard to the Union, but they had all been dispelled by his attendance at the meeting that night. He thought that if the provincial photographers fully understood their rights they would become members of the Union, and benefit greatly.

Warwick Brooks suggested that the annual meeting be held nearer the time of the N.A.P.P. dinner and the soiree of the Royal Photographic Society, when more provincials were in London.

William Grove presented the balance sheet, which showed a reserve of over £300.

Horatio Nelson King, in a speech full of appreciation of the success of the Union, proposed a vote of thanks to the committee. This was seconded by Mr. Smith.

Frank Bishop proposed, and Alfred Ellis seconded a vote of thanks to the photographic press for its intelligent appreciation and support of the aims of the Union. Thanks to the illustrated press for the way in which they had met the Union, to the auditors for their services in connection with the balance sheet, and to the chairman for his conduct of the meeting, were all duly carried.

Thomas Bedding replied, both as a member of the photographic press and as an auditor; and H. Snowden Ward, who was called upon, said that the Chairman had stated at the opening of the proceedings, that he (the speaker) was inimical to the Union. This was rather a mistake, as the speaker was strongly interested in the Union, and regretted that its rules prevented his becoming a member. He was not a portrait photographer, and the rules that answered well for many members were useless to the rapidly growing class of photographers whose work was primarily done for the press. He believed that rule 23 was too rigid, and pointed out that both in that meeting and the last annual meeting strong supporters of the Union had claimed that under certain circumstances they ought to be permitted to give the right of reproduction without charge.

About Patents.

WHEN asking if a thing is worth patenting you must carefully consider:— (1) Whether it is novel; (2) whether it is useful; and (3) whether it is commercial. If you wish to make money the third consideration is most important; yet it is generally overlooked. A thing which is useful to every photographer, and which he must constantly replace, will form the basis of a valuable patent. But a line which is of enormous value to a few men only (say, picture-copiers), and which will last a man a lifetime, may be of no commercial value, because it will cost more to make a market for it than can possibly be made by the sale.

Sometimes, if a novelty is very striking, a firm may buy the patent and put it on the market in face of a certain loss, simply for the sale of the advertisement gained from a striking novelty.

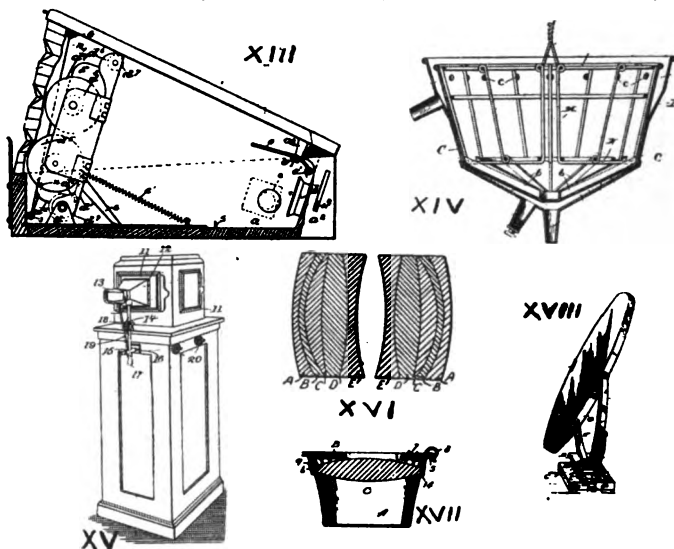
If you decide to take out a patent, and to be your own agent, there are several books on the subject. Most of them are written by patent agents, and many consist almost entirely of general, but hardly useful advice; a strong recommendation to employ an agent in all work connected with patents, and an elaborate list of charges (made by the author or his firm) for securing patents in various countries. A fairly useful little book, we have found, is *The Patentee's Guide*, by H. F. Boughton, M.I.M.E., price 4s., post free 4s. 3d. (London:—Simpkin Marshall), obtainable from any bookseller.

Anyone proposing to patent should get the instructions issued by the Patent Office itself, which will be sent free on remitting stamps for

Volumes of abstracts of patents relating to various subjects are issued by the Patent Office from time to time, and the following, dealing with photography, are at present obtainable:—1876, 1877—1883.

Complete specifications of patents are published by the Patent Office, at the uniform price of eightpence, post free (inland).

The Patent Office Library is one of the most useful, and one of the best conducted of London's public institutions. It is free from red tape, and it is with pleasure that we thus acknowledge the personal courtesy and helpfulness of the attendants. The Library is open from 10 a.m. to 10 p.m. No ticket of admission is needed, but the visitor is expected to sign his name in a book. The technical press of almost the whole world is represented on the reading tables; and the books of the library, arranged in bays according to subjects, are at the service of any visitor. Books



postage to ourselves or to The Patent Office, 25 Southampton Buildings, Chancery Lane, W.C. As the Post Office is the agent of the Patent Office, these instructions can be obtained to order (free) at all principal post offices, and are stocked by the general post offices in many of our largest towns. The post office also supplies the forms for application, etc., ready stamped, for the face value of the stamp.

Having obtained these instructions, it is well to buy one or two specifications of patents for similar objects to that which you propose to protect. With these as guide, and reasonable care and intelligence, you should not go far wrong.

The *Journal of the Patent Office*, containing abstracts (with diagrams in many cases) of all the specifications published, lists of applications, of renewal fees payable, of patents lapsed, etc., etc., as well as copious indices, and reports of legal cases affecting patent rights, is published weekly, price sixpence, post free from 10s. to 1/- . This journal can be consulted in most of the free libraries, consulates, chambers of commerce, etc., in Britain and the Colonies.

on photography and printing are in the second bay on the left as one enters the room. It is but necessary to take them from the shelves, without any application to the librarian. If you are in search of any particular book, the librarian or his assistants will look it up for you in the manuscript catalogues and find it on the shelves, if necessary. Or, if you are in search of information on a given subject, they will considerably assist.

7,632. *Embossing and Mounting Photograms*. C. J. Dorticus, 22 Spring-street, Newton, New Jersey, U.S.A. April 16th, 1895.

7,654. *Optical Lanterns*, automatic slide supply and other improvements. S. W. Allen, Exchange-buildings, Bute Docks, Cardiff. April 16th, 1895.

7,749. *Lothian Stereoscope*. A. H. Baird, 37 Lothian-street, Edinburgh. April 18th, 1895.

8,267. *A Portable Folding Dark Chamber*, consisting of a jointed metallic frame and screens. A. & J. Pipon, 15 Boulevard St. Denis, Paris. April 26th, 1895.

9,088. *Automatic Retouching Pencil*. C. B. Mortland, 304 North 8th-street, St. Louis, U.S.A. May 7th, 1895.

9,227. *A "Brilliant" View Finder*. G. F. Fraas, 18 Portland-street, Stepney. May 9th, 1895.

9,236. *A Twin-Lens Camera*. J. Stuart, 111 New Bond-street, and S. Muggeridge, 43 Henry-street, Pentonville, London. May 9th, 1895.

- 9,243. *A Flash Lamp*. C. A. McEvoy, 69 Victoria-street, Westminster. May 9th, 1895.
- 9,437. *Improved Printing Frame*. H. Sack, 55 Sternstrasse, Dusseldorf, Germany. May 13th, 1895.
- 9,438. *Improved Printing Process*. F. Hódliczka-Csizow, 80 Schottenfeldgasse, Vienna. May 13th, 1895.
- 9,496. *Flash-Light Outfit*. M. W. Newcomb, Salt Lake City, Utah, U.S.A. May 14th, 1895.
- 9,528. *Lens*. W. P. Thompson, 6 Lord-street, Liverpool. May 14th, 1895 (see fig. xvi).
- 22,013. *A Solution Heater*. Illustrated in our issue of February, 1895. C. E. Hearson, 5 Templar Street, Camberwell, Surrey. November 14th, 1894.
- 23,387. *Pressure Springs and Calches* for printing frames. H. J. A. S. and G. A. Spratt, Tudor Works, Tudor Road, Hackney. December 3rd, 1894.
- 23,524. *Tension Spool* for Photographic Films. T. M. Clarke, 1 Mount Vernon Terrace, Newton, Massachusetts, U.S.A. December 4th, 1894.
- 24,083. *Pivots and Stays* for swing backs of cameras. H. H. O'Farrell, c/o Coutts & Co., 59 Strand, London. December 11th, 1894.
- 24,109. *Telescopic Dark Slide*. M. A. Stubel, 10 Feldgasse, Dresden. December 11th, 1894.

9,438. *Improved Printing Process*. Relates to the incorporation of ferro-prussiate or chromic salts, or chromic acid or manganates, or permanganates with known sensitive preparations, to produce a more brilliant printing paper or plate. Albumenised paper, celloidin paper, and aristo paper, arrowroot plates, etc., are mentioned as being capable of treatment in this manner; the proportions have to be determined to a certain extent by experiment.

9,528. *Lens*. Relates to a simple or compound lens made up of one or two quintuple lenses. Fig. xvi. shows two of these quintuple lenses arranged to form a compound lens. The quintuple lens consists of two collecting lenses (C and D), of crown glass, and three dispersing lenses (A and E), of crown glass, and one (B) of flint glass. The lenses are cemented together in the usual way and, with the curvatures and refractive indices given in the specification, are said to produce a compound lens practically free from chromatic, spherical, and astigmatic aberration.

25,203. *Acetylene*. A gas generator suitable for producing acetylene from calcium carbide and water; consists of a chamber (A) formed of steel plates, which is provided with a door (B) for supplying the carbide, a lower door (C) for withdrawal of the lime produced, and a gas outlet (D). Water is supplied by a valve (H), and the supply is regulated by the pressure of the gas upon a collapsible vessel (I), or upon a diaphragm connected with the lever (E), which is pivoted at E', and carries at the other end the water valve (H). The lever (E) also carries adjustable weights (L, K) by means of which the water valve may be set to cut off the supply of water when any desired gas pressure has been attained.

Principal American Patents.

- 567,052. *Photographic Print and Negative Washer*. Apollonia Sprauer, Huntingburg, Ind. January 20th, 1896. (See fig. xiv.)
- 567,134. *Photographic Mount*. Clayton S. Harris, Philadelphia, Pa. April 11th, 1896.
- 567,297. *Roll-Holding Camera*. Newton Crane, Newton, Mass. December 12th, 1895. (See fig. xiii.)
- 567,495. *Photographic Background*. Louis R. Naef, Conneaut, Ohio. April 1st, 1896. (See fig. xviii.)
- 567,496. *Vignetter*. Louis R. Naef, Conneaut, Ohio. April 1st, 1896.
- 567,559. *Panoramic Camera*. Peter N. Angsten and Charles H. Gesbeck, Chicago, Ill. August 20th, 1895.
- 568,027. *Mount for Lenses*. William C. Homan, Meriden, Conn. May 4th, 1896. (See fig. xvii.)
- 568,052. *The Cooke Lens*. Harold D. Taylor, York, England. November 30th, 1895.
- 568,102. *Photographic Shutter*. Vernon Royle, Paterson, N.J. September 8th, 1894.
- 568,422. *Magazine Camera*. Henry E. Willsie, La Crosse, Wis. July 10th, 1895.
- 568,496. *Self-Toning Sensitive Photographic Paper*. Paul F. Schoenfelder and Emil Kehle, Newark, N.J. May 5th, 1896.
- 568,720. *Röntgen Ray Exhibition Apparatus*. A Hamerschlag, New York. Filed May 20th, 1896. (See fig. xv.)

567,495. *Photographic Background*. The combination with a supporting-frame of a shoe carried by the frame, and a background, proper, seated edgewise in the shoe, as and for the purpose described.

567,496. *Photographic Vignetter*. A vignetter for photographic cameras comprising a supporting arm or bar, a vertically adjustable carrier guided on said arm or bar to move in a plane substantially at right angles to the arm or bar, a tiltable mask or shield mounted on the carrier, and a single operating stem fitted to the arm or bar and having operative connections with the carrier and the mask or shield to adjust either device independently.

568,027. *Mount for Lenses*. The combination of a lens-tube, a lens or glass, an open lens-ring having separated ends and provided with a series of pressure-prongs, said ring being held on the edge of said glass, and devices for holding said ring and glass within the lens tube, substantially as described and for the purpose specified.

568,496. *Self-Toning Sensitive Photographic Paper*. A chemical composition to be used for preparing the surface of suitable material for photographic purposes, consisting of a chloride of a metal of the platinum group, silver nitrate, a holding substance, an organic acid, such as citric acid, and ammonia, substantially as described and modifications.

568,720. *Röntgen Ray Exhibition Apparatus*. In an apparatus for exhibiting Röntgen-ray effects, the combination of a box or casing, one or more fluorescent tubes therein, heads or supports adjustably supported upon the box or casing, and one or more fluoroscopes or eyepieces hinged to said heads or supports, substantially as set forth.



1. "Les Epreuves Positives Sur Papiers Emulsionnés." By Eug. Trutat. Published by Messrs. Gauthier-Villars et Fils, 55 Quai des Grands-Augustins, Paris.

2. "Der Pigmentdruck und die Heliogravure." By Dr. Josef Maria Eder. Price, 6 marks. Halle-a-S: Wilhelm Knapp.

3. "Formulaire des Nouveautés Photographiques." By G. Brunel. Paris: J. B. Baillière et Fils, 19 Rue Haute-feuille.

A Romance of Roe-ent-gen-ra, is a pamphlet reprinted from *Wilson's Photographic Magazine*, and illustrated by a photograph and radiogram of a mummified hand.

Tyag, or the Renunciation, is the title of a pamphlet issued by Shapoor N. Bhedwar, to explain the meanings of his fine series of eight studies now on exhibition at the Salon. In our Annual we reproduce one of these, and sketch in outline three of the others.

Curvature of Image and Astigmatism, etc., are simply and diagrammatically explained in Booklet 5c, issued by Taylor, Taylor & Hobson. The little book explains very lucidly the difference in performance between the best rapid rectilinear and the best modern anastigmats.

The Influence of Radiography in addition to the sum of photographic business, may be judged from the fact that only a few dozen copies remain of "Practical Radiography," of which an addition of 2,000 was published about five months ago. Every day the book is selling, mainly to surgeons.

Photography of Woodpeckers is printed and illustrated with one very fine example by Dr. R. W. Schufeldt in a recent issue of the American journal, *Shooting and Fishing*. The number of photographic sportsmen in the States is rapidly increasing, and we are surprised that more British amateurs have not followed the example of our one or two masters in the art.

Fallowfield's Remembrancer often brings to our notice excellent lines about which we have not heard from the makers direct. In the latest issue we especially notice the dust-proof lens caps from Taylor, Taylor & Hobson, which are prepared to fit flanges of the R.P.S. standards, and are simple brass caps with milled heads for attaching and withdrawing, and capable of absolutely protecting the back of the lens from injury during travelling.

The Lund Library of Photography.—"Plates and Papers," a book based upon practical experience in the factory and studio, by Dr. E. Stiefel, Ph.D., will probably prove to be amongst the most useful in the Lund Library of Photography. The title fairly indicates the scope of the

book, which is divided into thirty-five chapters, and deals not only with the more generally used processes, but also with ferro-prussiate, kallotype, the primuline process, etc.

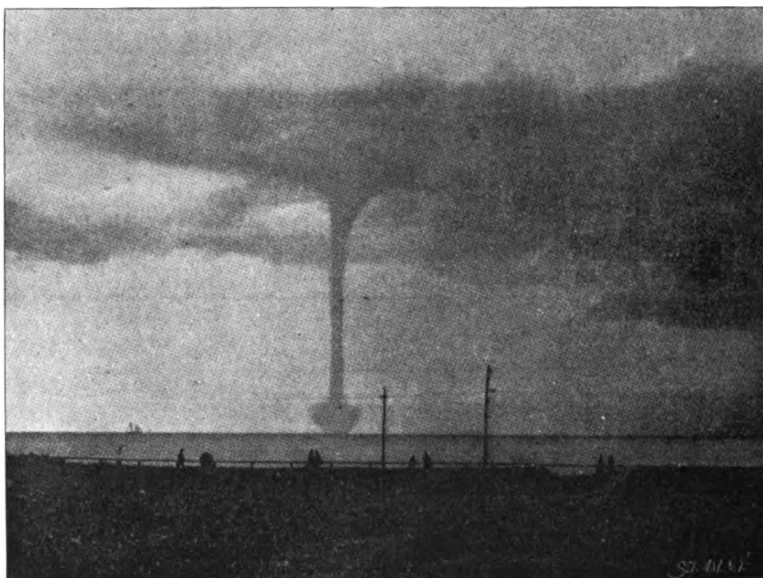
A Glimpse of Cranbrook, the town of the Weald, is a notable publication, although it is only a 6d. guide book. It is issued by E. J. Holmes, who, in addition to being the local photographer, is a printer and postmaster. The book is illustrated by a great number of half-tones of exceedingly picturesque scenery and buildings, from very fine negatives by Mr. Holmes, and the general style of the book is such as to make the reader decidedly wish for a chance of spending some little time in the town and district so well described and portrayed.

Les Epreuves Positives Sur Papiers Emulsionnes (1) has been sent us from Paris for review. Published by the well-known Messrs. Gauthier-Villars et Fils, the book should recommend itself, more especially as it is prepared by Eug. Trutat, president of the Photographic Society of Toulouse, who has written many valuable works on similar subjects. This is a short treatise of about eighty pages, and discusses several kinds of emulsion papers, their manufacture, printing, development, etc., in plain, clear language, which should

the liberty of reproducing. For the meteorological particulars our readers are referred to *The Scientific American*.

Formulaire des Nouveautés Photographiques (3) is the title of a small volume of over three hundred pages, recently received by us from Paris. It is by M. Georges Brunel, the noted scientific professor and writer, and is published by J. B. Baillière & Son, in their library of useful knowledge. It is thoroughly illustrated, and covers a wide range of subjects, from the smallest hand-camera to half-tone work and Röntgen rays. The text is clearly written, and comprises a very comprehensive amount of information put in a shape to be readily understood. Such works are of great assistance to those, especially, who cannot search through more elaborate treatises, and the book should be of real service.

Photograms of '96 can hardly be reviewed here, but we remind our readers that it is ready. The cloth-bound edition, it seems to us, is much better value than the paper-covered, and as a few of last year's volumes remain it is still not too late to commence a library of photographic volumes, which in a few years will be priceless to anyone interested in the progress and the practical applications of photography.



A WATERSPOUT.

By Dr. F. C. U. H. vom Saal, in "*The Scientific American*."

aid greatly in understanding the subject. This series of books ought to be translated for the benefit of English readers who cannot read them in French.

Dr. Eder's latest Book (2), dealing with the two principal applications of the chromium salts in photography, comes just at a time when the two processes are having great vogue. Never, since the palmy days of Lambertype has carbon printing been so popular as at present, and the present development of photogravure, both commercially and as an amateur hobby, is quite without precedent. Of Dr. Eder's treatment of the subject little need be said, for his accuracy and thoroughness are well known. Thirty-one diagrams illustrate the apparatus and principal manipulations, and altogether this is one of the most useful sections of the monumental "*Handbuch der Photographie*," of which it forms the fourteenth part.

A Curious Phenomenon.—So far as we are aware, no photograph of a waterspout has ever been published until September 26th, when a reproduction was given in *The Scientific American*, from a negative by Dr. F. C. U. H. vom Saal. The doctor describes at length and in minute detail the formation of three successive waterspouts off Cottage City, Martha's Vineyard, a little seaside town in Massachusetts. The third waterspout is shown in the doctor's illustration, a reduced copy of which we have taken

In preparing the present year's Annual we asked the exhibitors whether they would prefer a fee for reproduction or would consider the work as a piece of craft co-operation in the interests of photography. Almost unanimously the latter course was preferred, so we spent the money that would have otherwise gone to fees in improving the book, wherefore our readers will find additional pages, a still better paper, and a considerably increased number of reproductions. For all of which their thanks are due to the public-spirited exhibitors who made it possible. One regret we have, that the book could not be still further enlarged, for in the pictures placed at our disposal, and which we were forced to decline for want of space, were enough to make a splendid collection two or three times as large.

The Publications of the American Smithsonian Institute and its kindred Associations are so thoroughly good that we feel loth to make any suggestion; but as we know that those responsible for these works are always anxious to increase their value, we venture on a slight criticism of one of the minor departments of the report of the Missouri Botanical Gardens just received. Half-tone reproductions from photograms of trees are largely used in this book, and there is great difficulty in some cases in knowing the relative sizes of the trees. In the descriptive notes on the line sketches the scale is carefully given, but in photographing the

trees themselves, there seems to be no means of comparison. For instance, in the first illustration of *Hicoria pecan* the whole tree is represented as about 3½-in. high by one-eighth of an inch in section, while the next one, giving details of the bark, shows only the stump of the tree 1½-in. wide when measured clear of the base. In neither case is there any means of realising the absolute size. *Hicoria aquatica*, which is photographed in a group of five or six trees, gives the idea of being a small affair, whereas *Hicoria minima*, photographed by itself, and with nothing else of any size anywhere near it, looks like a tree of very considerable proportions. The same difficulty is found, and is even perhaps increased, when we come to the *Agaves*, except in one case, where a man is introduced for comparison purposes.

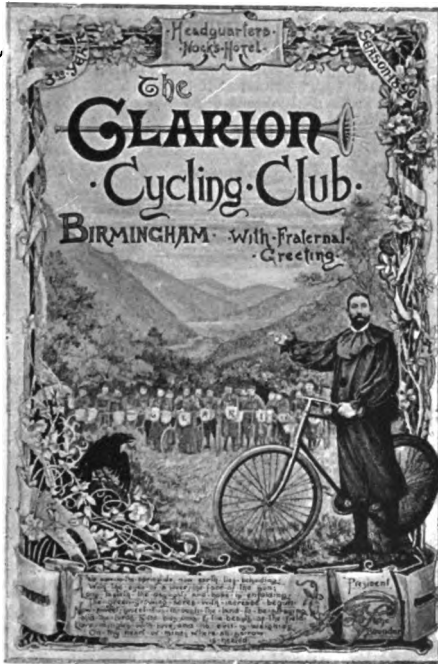
Reproduction is a form of flattery, but most publishers like acknowledgment of the source of matter. We note that *Kuhlow's German Trade Review*, which has more than once been charged with extensive unacknowledged appropriation, has latterly quoted some of its editorial notes

originals, as they say that they find this adds greatly to the popularity of the list. *Shooting and Fishing*, an American weekly, and one of the best papers dealing with sport, has for some months been almost constantly illustrated with more or less work from photographic sportsmen. Although, in many cases, the photography is not of the best, the value of these pictures, as records, is immensely greater than that of any sketch could possibly be. A. G. Wallihan, of Lay, Colorado, has just sent us some of his latest work. One or two notes of his experiences may be interesting. He says:—"I am sorry to say that my shutter has clicked but few times and on but few game subjects so far this year. I caught a rabbit in February, and on 1st inst. I caught an eagle at 30-ft. flying as I scared her from her nest at 100 of a second. The elk were very scarce, the antelope went round me, and the wind blew fearfully all through April so that work with camera was not to be thought of. Mrs. Wallihan and I expect to start for Wyoming in a few days after mountain sheep, and I hope to break the spell of bad luck. On my cougar trip I spent six weeks hunting them, working one day with thermometer 20° and never found one. I hope to get something up in Wyoming, and will send you a print or two if I do. I secured several antelope and deer photos last fall.

Constructive Criticism.—We are often asked to criticise, candidly and suggestively, the work of those who aspire to become pictorial photographers. We are always prepared to give such a criticism, by Gleeson White, or some member of our staff, as occasion seems to demand, on the following conditions—

1. Only one or two prints must be sent.
2. They must be mounted, flat.
3. Each must have a piece of tissue paper or tracing paper gummed by its edge to the back, and folded over to cover the front of the print.
4. We reserve the right to cut or damage the print in any way that seems necessary.
5. The wrapping must be stamped and addressed inside (for letter or parcel post) so that it can be returned to sender by simply re-folding the paper.
6. Address to

Constructive Criticism,
c/o THE PHOTOGRAM, LTD.,
6 Farringdon Avenue, London, E.C.



A PHOTOGRAPHIC GREETING-CARD.

By J. Cruwys Richards.

directly from our pages. A case in point is a portion of the article by Agar Baugh, on "Schott and Genossen," which appeared in our issue of July, and which is given as a note under the general heading "German Trade at Home." *Shashin Sowa*, our Japanese contemporary, which is making wonderful and satisfactory progress, also reproduces our articles occasionally, but we have no doubt this journal gives full acknowledgment, though our ignorance of the Japanese printing character prevents our being sure on this point.

Professionals and Amateurs alike cannot be too often reminded of the many ways in which photography may be made serviceable to men of business and men of pleasure. J. R. Cruwys Richards sends an example of a greeting card prepared by him for a cycling club. In this case the original was a wash drawing, and the prints were bromide. Last year the original included more photographic work. It had a dozen portraits of the officers and members of the club, as well as a certain amount of photographic work in the main design.

Sportsmen are becoming more and more interested in photography. Armstrong & Co., of Newcastle-on-Tyne, who are extensive manufacturers of guns, etc., have illustrated their latest catalogue with half-tones from photographic

Correspondence.

A Photographic Guild.

Mr. Harding's letter in our last issue has evidently pointed out a want felt by many others, and we have had more correspondence on the subject than we can either insert or advantageously condense for the present issue.

One point made by several of the correspondents is, that as the Guild is suggested as a purely postal correspondence society it is a waste of time to call a meeting in London, or anywhere else, as the people attending such a meeting could not do more than draw up rules to submit to the intending members. When we proposed to call a meeting in London we thought it seemed the wisest course, but we bow to the wishes of the majority.

To put the work on a practical basis we give, at foot, an outline prospectus of the Guild, and invite further and immediate support from such of our readers as are willing to join the Guild for one year on trial, subject to the rules being approved by the majority of members. We ask for

Suggestions as to rules, methods of working, etc. *Volunteers* willing to act as experts in various subjects and to answer correspondents, or to assist members in other ways.

On the basis of the suggestions made, we will draw up a series of rules, which we will publish in our next issue, and to which we shall invite definite amendments and additions. At the end of one month we will circulate a copy of the rules, with the amendments, and a voting-paper, to each of those who have intimated their intention of joining. One week after the circulation of these papers, those which have been returned will be opened and the rules or amendments as chosen by vote of the majority will become the first constitution of the society. We shall then ask every member to obtain as many others as he possibly can, and at the end of three months shall publish the first list of names.

As to Organisation. We will undertake the work of preliminary organisation; so that should the Guild fail of establishment, no one but ourselves will be responsible for the expenses. The use of our offices, reading-room, etc., shall be freely at the service of the Guild for the first year at any rate. Out-of-pocket expenses, however—typist's salary, stationery and postages, will be charged to the Guild, should it be formed.

Means of Communication. We are willing, as suggested by several writers, to allow THE PHOTOGRAM to be used as the organ of the Guild, but as the matter is interesting only to a section of our readers we shall not (after this month) allow it to encroach upon our editorial pages, but shall give it free space in our advertising columns. Even there, should the organisation be as successful as some of the enthusiasts hope, we shall, eventually, charge the cost of type-setting and actual proportion of cost of paper and printing for actual Guild notices. Unless the Guild is self-supporting it can be of little real value to photography.

We append outline prospectus:—

THE PHOTOGRAPHIC GUILD.

Formed to provide the advantages of a photographic society for isolated photographic workers all over the world. Subscription, 5/- per annum.

IMMEDIATE ADVANTAGES.

Correspondents in all parts of the world.

Free Dark Rooms everywhere.

Circulating Library, including all the expensive works of reference.

Loan of Apparatus. Members may borrow the more expensive photographic apparatus. Thus the Guild will encourage research work, and other special work that would be impossible to many of the members.

Expert Advice by a staff of honorary consulting experts.

List of Members and certificates and badges of membership will serve to introduce and identify members to one another, when travelling.

Professional Directory. The list of members will give particulars of whether they are professionals or amateurs, and will indicate those who have stocks of landscape, etc., negatives from which they are willing to supply prints for reproduction to illustrate books, magazines, etc.

Uniform Hotel Tariffs. Lists of hotels adopting certain uniform tariffs (on various scales, to suit the pockets of all classes) will be published.

ULTIMATE OBJECTS.

Railway Rates. Equitable and reduced railway rates (as granted to anglers) for *bonâ fide* members when travelling for photographic purposes and with their apparatus.

Permissions to photograph in many beautiful and historical places, museums, etc., now closed to photographers.

Government Recognition. To induce local as well as national governments to recognise photography, giving it proper representation in public art galleries, museums, etc., etc., etc.

A suggestion. Thomas Letchford, writes:—"I intend, if possible, to test the feeling of the Bristol and West of England Association on the subject, by reading Mr. Harding's letter and moving a resolution that the Association support the proposal." This is a suggestion for others.

A munificent offer. Mr. E. J. Wall recently offered us—to be used as we chose for the benefit of photographers—about two tons of photographic magazines—British, American and Continental. If the Guild is formed we shall accept this offer on its behalf, and as soon as the funds allow of binding the magazines, the Guild will possess a very fine nucleus for a lending and reference library.

Our own library of some 500 volumes is at the service of the members, and to the gift of Mr. Wall we can add some three hundred volumes of magazines more recent than those he has given.

None too young. An amateur from Stratford, E., fears he is too young for Guild membership; but in such a case there can be no age limit.

Not a Charity. Tom Anderson writes: "Above all, don't let the Guild be a charitable institution. If we feel that our subscriptions pay all expenses, we shall feel free in borrowing books and apparatus, and in worrying the experts for advice."

Hospital Albums. A Barnsley Beginner says: "A good work for the Guild would be to collect prints and make them up for hospitals, infirmaries, workhouses and so on, in albums, like the *Barnsley Chronicle* is doing, which, I think, is a very good idea, and many who cannot make prints can mount them and put their titles neatly in the albums, especially our sisters who are particularly good at such work."



Questions are answered by post when stamped envelope is enclosed for reply. Questions without stamped envelope are not answered at all.

A few of the most generally useful answers are given in this column.

Queries should be brief, but MUST give full details; and should be accompanied by samples of faults, etc.

OPALINE MOUNTING.—Perhaps the accompanying instructions may help you over your difficulty, but if they do not, we shall be glad to see samples of the opalines which are peeling, and to have full particulars of the method you adopt. For opaline mounting use a solution of fairly soft gelatine, of a consistency that will just make a moderately firm jelly when cold. Have this in a deep porcelain tray, standing in a metal water bath considerably larger than itself. See that the porcelain tray is separated half-an-inch above the bottom of the water bath (this can be done by means of a couple of chips of wood) so that the water has full play underneath, and keep the bath at such temperature that the gelatine solution is conveniently fluid. The squeegee should be of the flat rubber variety, and should be at least as long as the base of the glass on which you are mounting. The glass should be thoroughly clean, and must be absolutely free from grease. The most convenient method I have found is to work with the cleaned glasses piled on the left hand and prints on the right. Take one of the prints, place it in the gelatine solution so that it is completely soaked and has no air-bell adhering to the surface. With the left hand take one of the glasses and pass it through the hot water in the water bath, then, holding the glass over the gelatine bath, lift out the print by one end with the right hand, slip it as quickly as possible to its exact position, have the fingers of the left hand under the glass, and grasp the print a couple of inches from the side with the left thumb. Taking the squeegee in the right hand, place it firmly across the print rather nearer the left thumb than the middle line, and pass it firmly from there to the right hand of the print; turn the glass round again, keeping the fingers underneath and the thumb on the print. Squeegee again from near the thumb to the opposite end, and these two strokes of the squeegee, if properly done by a practised hand, should remove the whole of the air and surplus gelatine from between print and glass. At this stage place the next print in the gelatine solution and continue squeegeeing across and across the print on the glass until the paper back is absolutely dry. The secrets of success in preventing air-bells in the mounting, either from want of contact in the first instance or from the print peeling after it is once dried, are the following—

1st.—Absolute freedom from grease.

2nd.—The plate and the solution must be sufficiently warm, and the squeegeeing must be done sufficiently rapidly to secure complete contact before the solution becomes set.

If the mounter is a beginner and slow with the squeegee, the gelatine must be a little warmer and the glass must be placed longer in the water bath than is necessary for a more skilful mounter. To prevent air-bells, due to the peeling of the print after it has been once mounted, it is necessary that the gelatine solution should be as strong and as cool as compatible with the speed of working. If it is too weak, the gelatine too soluble, and the water too hot, there is the liability to put down the print after squeegeeing before the film between its surface and the glass has sufficiently set.

If working with gelatino-chloride paper, and the gelatine solution very hot, there is a liability to bring off the film of the paper itself, and this can be avoided by treating the prints with an alum bath to harden them.

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THE PHOTOGRAM

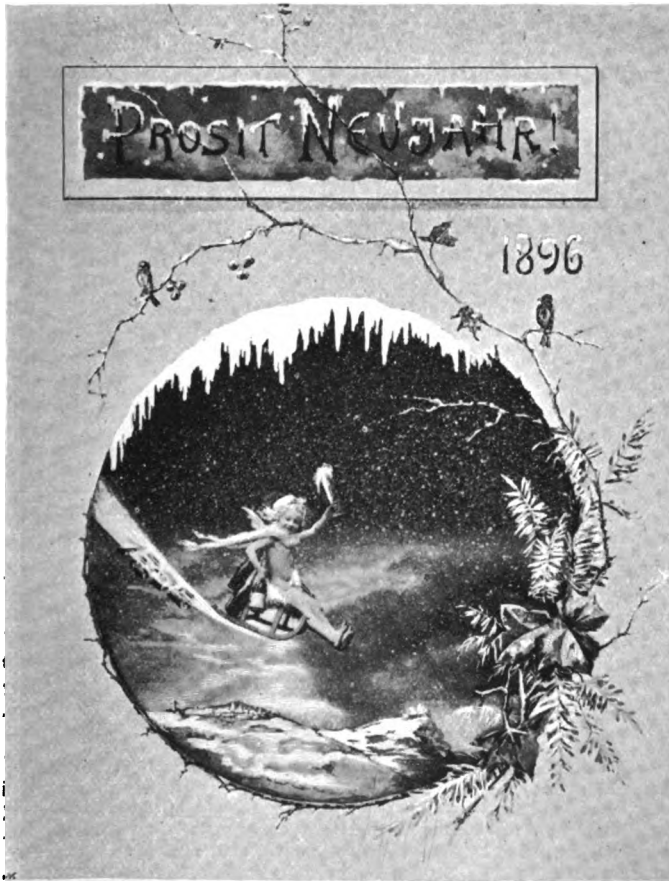
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Xmas Cards and Presents.



GREETING: TO THE WORLD'S PHOTOGRAPHERS.
FROM CH. SCOLIK.

BY THE inclusion of some light but purely photographic trifles: "Picture Plays," "A Quiet Art," and notes on that mysterious odic force, we have tried to impart a somewhat Christmassy tone to this issue, and a reminder *re* the cards and presents proper to the rapidly approaching season will scarce be out of place. At various times throughout the year we have suggested the preparation of home-made photographic greeting cards, and even now it is not too late, especially if the maker relies upon his mounts for the motto and the special seasonal application. In the current and the last two issues many fine collections of mounts for the purpose have been described.

Of methods for making special greeting pictures we have given particulars and examples on many

occasions and in giving two others in the present issue we feel that there is no necessity to add any instructions. Both the examples owe much, in the originals, to the brush, though both are prepared for reproduction by photography, the originals being photographed and copies made upon bromide paper.

The example herewith, reprinted from our Annual, is companion to the card reproduced in our issue of September. Both were prepared and sent by Ch. Scholik, of Vienna, as a greeting to the world's photographers, and when reproducing one in our Annual we asked that some of our readers of another nationality should prepare a happy response which we may reproduce in our January or February issue, and also in next year's Annual. The example given amongst "Prints" is a card prepared by A. H. Wall, an old friend of all photographers, who is this year publishing a series of similar cards, representing scenes in Shakespeare's country, and printed in platino-bromide.

There is ample evidence in the sample-books of the general publishers of Xmas cards, that photography is very decidedly in fashion this year; and it seems a part of the duty of every photographer to encourage this tendency. Apart from the undoubted artistic advantage of the modern photographic or photo-mechanical card as compared with the highly-colored and jewelled and frosted varieties, there is a distinct question of *esprit de corps*. The photographer who is really enthusiastic about his craft will scarce lose an opportunity of showing any one of its many applications, and every effort that increases the general interest in photography increases the photographer's pleasure and profit. Which consideration brings us to the subject of Xmas presents and New Year gifts, and to the suggestion that they should take a form in accordance with the hobby of the donor. If we can so choose our present that it may carry with it a new incentive, and add a new and permanent charm to the life of the receiver, we have reached the highest success possible to a giver; and a present that will lead the receiver to a practical interest in an art so fascinating as photography will certainly add a new and permanent charm to his life. Wherefore, when considering what your gift is to be, think, at any rate, whether a photographic something is not suitable. A camera, especially if accompanied by a few personal instructions is likely to prove a permanent source of happiness, and is just as suitable to a girl as to a boy. And a camera has the advantage that it can be bought at prices to suit all pockets.

If your friend is already a photographer, the choice of a suitable present is still easier, especially if you are sufficiently in touch with him to know his particular requirements. From a convenient draining-rack or a hypo solution stock-jar to a new lens or an enlarging lantern, there is an immense range of useful and acceptable articles. Even if no piece of apparatus exactly meets your ideas, books are always acceptable, and it is easy to obtain a handsome photographic gift-book, or, if your friend is not photographer, a book which is an example of photography or photo-mechanical work applied to illustration.



For Next Year we have very many good things in preparation, but scarcely feel inclined to make more than a general announcement. Last year we announced our programme well in advance, and this year were somewhat surprised to find that certain of our contemporaries had two or three of exactly the same leading lines as our own, and in some cases with the identical titles which we had announced months before. Our January issue will be a specially strong one,

and will include a supplement of considerable practical value in the form of a lens testing chart, which will be accompanied by an article giving simple directions enabling anyone to accurately compare two lenses with special references to any, or all, of the aberrations. There will be a valuable suggestive article by Gleeson White, illustrated with a number of gems of portraiture by W. Crooke, of Edinburgh.





ALLEXANDER BLACK, an eminent American writer and critic, a member of the staff of the *Brooklyn Times*, has evolved a new line in lantern entertainments, and has, in his own country, scored an immense success. Already he has had more than

one imitator, and no doubt many of our readers will be inclined to introduce something on similar lines into their own lantern repertoire. It is probable, too, that we shall see Mr. Black and his Picture Plays in Britain during the coming spring—hence it seems desirable that our readers should know something of the matter.

A "picture play" consists of a play or novel,

illustrated by lantern slides from "life models." To this extent it is similar to the harrowing recitations of "Little Jim, the collier's child" and other pathetic and moral stories with which we are fairly familiar. The difference between these crude performances and Mr. Black's picture play, is that the latter is written especially for photographic illustration, and is illustrated by the author. In this way the unities can be preserved, for not only are the sitters chosen to fit the story, but the story is moulded to fit the sitters. The first essay in this direction was a story entitled "Miss Jerry," in which were introduced all the essential features. Sparing no pains, Mr. Black photographed the scenes of his story in all their varied natural surroundings, taking his sitters to the seaside, the country, the parks, etc.; and to Americans who know the places, this "local coloring" must be especially attractive. The characters,

too, are in many cases prominent real persons, and only a man of Mr. Black's standing could have secured sittings from these busy people. In "Miss Jerry," for instance, the heroine, a newspaper woman, interviews Chauncey M. Depew, and is photographed in conversation with him in his private office at the Grand Central Station of the Hudson River Railroad, of which he is president. The same enterprising lady also interviews the head of the weather bureau, the chief engineer of the Brooklyn Bridge, and the elephant Juno at the zoological garden in Central Park, New York. The tale includes some strong characters, and the lantern addition gives scope for some novel and very striking "effects." One, which has been greatly praised by the American press is Fifth Avenue by moonlight, with the electric lights, and the dimmer lamps of the carriages shining bright amongst the shimmer of the moonlight upon the streets and buildings. Not only the doings, but even the thoughts of the characters are represented by the slides, and two of the most effective parts of "Miss Jerry" are the lover's reverie, and "a dream of fair women."

"A Capital Courtship," as its title half indicates, is mainly laid in Washington, the capital of the



MISS JERRY.



VIOLA.

United States. The characters are totally different from those in the other play; and it not only

introduces well-known people in their own characters, but the fictitious characters are represented by well-known Americans. Amongst those who sustain their real characters are President Cleveland, who gave sittings in his private office during the recent "war scare," Thomas B. Reed, speaker of the House of Representatives; the Secretary of War; the Chief Engineer of the U.S. navy; Greely, the arctic explorer; Professor Mason, of the Smithsonian Institute, etc. Amongst the fictitious characters, the Hon. Wm. Cullen Bryant poses as Colonel Winfield; W. J. Baer, the miniature artist, represents "Randy" Ellis; Count

story with alternating and changing tones that almost make the figures seem to be talking."

The first of these picture plays was originally produced at Chautauqua, in October, 1894, and since then has been a great success in all parts of the United States and in Canada. The second was introduced last spring. They have been given in theatres and opera houses, in college entertainment courses, and before social, literary, artistic and commercial societies and clubs, as well as at many important private receptions, etc.

The pictures with which we illustrate these



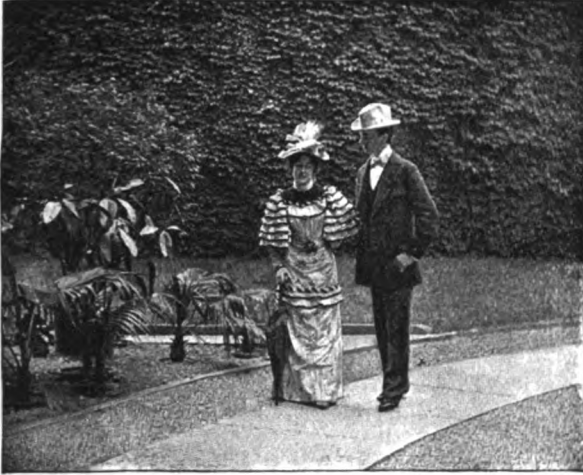
MINING CAMP MELODIES.

Rudolph is taken by Henry White, dramatic critic; and "the widow" is Miss Carrie Louise Ray, a well-known dramatic reader and reciter. All the other characters are by people in New York and Brooklyn "society."

Each of the "plays" has two hundred and fifty slides, which are passed through the lantern at an even speed of about three to the minute, while Mr. Black smoothly tells or recites the story. Of course, a good lanternist, thoroughly drilled in the story is absolutely necessary, as the success of the play depends largely upon careful attention to detail. The entertainment is divided into three parts of about half-an-hour each, and as one of the American papers says: "Mr. Black reads the

notes hardly need any description beyond the titles. "Miss Jerry" has been published in book form with thirty-five illustrations, and has been a very great success; but this is not all, nor the most important part of Mr. Black's literary work. He is the author of "Photography In-doors and Out" (Boston: Houghton Mifflin & Co.), and contributed "The Story of Ohio" to the important Story of the States series produced by the Lothrop Publishing Co., of Boston.

As an enthusiastic amateur photographer Mr. Black has long been a leading member of the American Institute, of Brooklyn, and we may be sure that when he visits Britain he will find a warm and appreciative welcome.



"In : :
the : :
Garden."



"A : : :
Capital :
Courtship."



"Jerry at the : : : :
Office of : : : :
Chauncey M. Depew."

. . .

SCENES FROM THE
"PICTURE PLAYS."

Acetylene.

IN THE early days of Wilson's discovery of the electric furnace method of making acetylene, this magazine gave particulars of what promised to be an immense advance in lighting (p. 55, last year). Since then the commercial possibilities have been developing—houses, mills and churches have been fitted with the new light, experimenters have been busy, and yet we have given no further particulars. For this there have been two reasons—first, the supply of calcium carbide, hampered as it has been by heavy freights and underwriters' scares, has been scarcely sufficient to supply the demand; second, apparatus especially designed for photographers' use, was not on the market. Now, however, the American insurance companies' and the underwriters' alarm is subsiding, producers of calcium carbide in America, in Germany, and elsewhere, have increased their plant and are still further increasing it, and there is every likelihood that within a month or two there will be stock in excess of the demand, and an out-put increasing more rapidly than the consumption can possibly grow.

In our reading-room can be seen the principal simple generators now on the British market, with the apparatus for portraiture by the acetylene light and for its use in the optical lantern, and these will be carefully described and illustrated with such improvements as may be made from time to time. We now need only recapitulate the basic facts as to what is acetylene, and then briefly deal with some of the alleged dangers.

Acetylene is a hydro-carbon gas (C_2H_2) evolved when calcium carbide (CaC_2) is brought into contact with water.

The calcium carbide is manufactured, commercially, by fusing together lime (calcium) and coal (carbon) at intense heat. The only reasonably available method of producing this intense heat is the electric furnace, and as electricity is most cheaply generated where there is abundant water-power, the manufacture of calcium carbide will always be confined to districts where water-power is plentiful. The carriage of the carbide, even from America, costs much less than the difference in cost of production by steam as compared with water-power; and at present the mighty Niagara is making most of the world's supply of calcium carbide. The Acetylene Gas Co., whose British works are at Ashford, is building further premises in Niagara City, for the production of the carbide on an enormous scale.

FACTS AND FIGURES

that may be useful in considering the advisability of purchasing an outfit are the following:—

Calcium carbide 1-lb. = acetylene 5 cubic feet.

Acetylene 1 cubic foot = light 50 candle-hours.

In other words, 1-lb. of calcium carbide will supply a 50-candle light for five hours, or five 50-candle lights for one hour.

Acetylene = 240 candles to coal-gas 16 candles. On these figures it will be seen that the decomposition of 100-lbs of calcium carbide yields 500-ft. of acetylene, equal in illuminating power to 7,500-ft. of coal-gas. The average price of calcium carbide is not more than sixpence per pound, therefore, at

this price the 500-ft. of acetylene costs 50s., which is equivalent to coal-gas at 6s. 8d. per 1,000 cubic feet. We may thus work out—

Calcium carbide at 6d. = coal-gas at 6s. 8d. per 1,000.			
"	"	5d. =	" 5s. 6d. " "
"	"	4d. =	" 4s. 3d. " "
"	"	3d. =	" 3s. 4d. " "
"	"	2½d. =	" 2s. 9d. " "
"	"	2d. =	" 2s. 3d. " "

This is not absolutely correct, since fractions of a penny are all given as half-pence.

Of course, this calculates nothing for attendance to the generator, or for interest on capital cost, but both these items are so exceedingly small as to be absolutely unimportant. At the time of writing, calcium carbide can be bought retail, in comparatively small quantities at 5d. per pound. The price may, in the present unsettled state of affairs, go up to sixpence, but it is scarcely possible for it to go higher, and as the main item in this cost is freight and insurance, the price is certain to come down *very considerably* as soon as the business allows of its being shipped in whole cargoes. The price delivered at the works is such that when transport arrangements are once completed the carbide should not cost more than 2½d. per pound in England. Even at the present time, Read, Holliday & Sons, Ltd. (Huddersfield), who mainly supply large generators, and quote for the carbide in bulk, say that at their present price acetylene is equal to

COAL-GAS AT 3S. 10D. PER 1,000 CUBIC FEET,

and the circular of A. & J. Smith (Aberdeen) makes the same statement. This is equivalent, as will be seen from our table, to quoting the carbide at 3½d. per pound.

Acetylene has many advantages over coal-gas for illumination. It consumes less oxygen, and produces less heat (as 9 to 14). It is practically equivalent to sunlight in color, and therefore, in photography, gives a truer color-rendering than any other artificial light except, perhaps, the incandescent electric. It gives off no carbon monoxide, and far less carbonic acid (as one to six). Finally, it causes far less strain to the eyes.

THE ALLEGED DISADVANTAGES.

It has been stated that acetylene is very poisonous, and therefore dangerous to inhale. As to this, Gréhan, the French chemist, stated only a few days ago that coal-gas is much more injurious than acetylene, both to man and the lower animals. This statement is the result of careful tests; and another chemist has found that acetylene makes no combination with the blood—an observation of immense importance.

THE DANGER OF EXPLOSION

is the most serious charge that has been made against acetylene, and it certainly can be made into an explosive, just as deadly as coal-gas or gunpowder. Faulty apparatus and careless handling are sure to cause serious disasters, as indeed they have done already. It behoves those who are interested in acetylene to fully recognise this fact, and let the public know exactly wherein lies the danger, in order that explosions may be

attributed to their real causes and not lead to a panic-scare such as recently seized the American fire insurance companies. Fortunately, the American companies very quickly recovered their equanimity and now admit acetylene as freely as coal-gas, provided the generator is an approved pattern.

There are many ways in which explosions can occur. Acetylene, when mixed with air in certain proportions, forms an explosive; hence, if a tap is left with the gas escaping in a room where there is a light and no free ventilation, there is danger of an explosion sooner or later. However, as the smell of acetylene is much more pungent than that of coal-gas there is more chance of a leak being detected with the new gas than with the old. A hushed-up explosion which occurred the other day—hushed up because the author was ashamed of himself—appears to have arisen as follows:—A chemist was experimenting with acetylene, and "thinking" that his generator needed re-charging, opened it for the purpose. The rapid evolution of the strong-smelling gas caused him, thoughtlessly enough, to leave the room and shut the door, with the result that, as there was a light burning and the room was small, the windows were blown out. It is only with large generators that this trouble is possible, since there are few rooms so small that even the total out-put of a small generator would be sufficient to make an explosive proportion with the air.

Explosions of the generators are a theoretical danger, and some have occurred, but under well-understood conditions. When the carbide is placed in its cage, before evolution of gas commences, the upper part of the generator is filled with air, and as the gas increases in quantity until all the air is forced out, it is obvious that at some period in the process the generator is filled with an explosive mixture. There is a general fear that light may travel back from the burner along the supply tube, and thus explode the generator; but this is quite a groundless fear. In saying so we are not relying upon acetylene experience, since the same considerations apply to every other gas-producing apparatus, and such producers have been thoroughly tested for years. The safeguard against "lighting back" is found in the pressure of the gas, which at the commencement of generation is very considerable, as well as in the comparatively cold burner and length of cold supply tube which prevent the small supply of gas contained therein being raised to ignition-point by its own combustion. In the case of simple generators with a blow-off tap close to the generating chamber, it has been found that by putting a light to the blow-off and then raising the float so as to cause an inward pressure of air, an explosion, startling rather than dangerous, can be caused. But there is no reason to light the gas at the blow-off tap.

THE ATTACKING OF BRASS

seems to be a fear based on a slight misconception. Acetylene, in the presence of water (damp) freely attacks copper, forming a highly explosive compound. With brass, however, even with an alloy containing one part of zinc to seven of copper, this explosive is not formed, though there

is a slight corrosive action when the gas and brass first meet. The result of this is that on using acetylene with old fittings there will be a tendency for the taps to work stiffly for a time, but after the action has proceeded a little way it ceases, unless the brass is carefully scraped and cleaned so as to present a fresh surface.

THE COMPRESSED GAS

has undoubted dangers, just as in the case of compressed oxygen, and the terrible accident in the laboratory of Raoul Pictet, in Paris, upon which a good deal of alarmist writing has been based, was essentially a compression accident. Cylinders containing the gas under high pressure are but little, if at all, used in England, and there seems every reason to avoid them. Acetylene can be easily reduced to the liquid form by pressure, but above a comparatively low temperature (90° to 100° Fahr.), no cylinder pressure will keep it in the liquid form. P. Villard has given a table shewing the increase of pressure caused by a raising of temperature, taking as his basis a pressure of 390-lbs. to the square inch, with the thermometer at zero.

Temperature (Fahr.).	Pressure per square inch.
0°	390-lbs.
42°	450 "
60°	570 "
60°	645 "

Read, Holliday & Sons state in their price list that even the friction caused by unscrewing a cap or plug may be sufficient to raise the liquid immediately close to the point to the temperature which returns it to the gaseous condition, and hence lead to the bursting of the cylinder.

MINOR DISCOMFORTS.

The smell of acetylene has been urged in its disfavor, though we feel inclined to consider this as a provision of safety. Still, there is a strong and characteristic odor if the gas is allowed to escape in any quantity. The carbide is very freely deliquescent, hence, even the dampness in the air of a room will cause a faint odor to be perceptible if uncovered carbide is left about. It is well to charge the generators (if of a very simple type) in a room where the windows can be opened for a moment, and also in blowing off the mixture of air and gas that comes from a freshly-charged generator, to take a rubber tube out of the window.

In the decomposition of the carbide considerable heat is evolved, and the gas is liable to be mixed with water-vapor, which will condense in the cold pipes. As a remedy against this, all the generators save, perhaps, the very cheapest, are provided with condensers in some form, and anyone who is making his own generators can easily have similar provision.

Having now given all the points that have been urged against acetylene, we will next month deal with the various forms of apparatus, merely remarking, at present, that there seems every reason to believe that acetylene has "come to stay," and therefore it is wise economy to start with an apparatus that will not soon need to be replaced by a larger.

(To be continued.)

Fields for Research. No. II.—Odic Force.

THE Baron Charles von Reichenbach, a celebrated and successful experimental chemist who (amongst other matters) was the discoverer of creosote, published in 1848 a most important series of investigations on what he called odic force. It is true that by many of the ultra-wise persons who had not attempted to repeat his experiments he was condemned as mad; and such was the power of "scientific" scepticism that his results have been generally disregarded. Professor Gregory, of Edinburgh, whose great ability is generally admitted, and whose "Dictionary of Chemistry" is well known, was one of the first to follow up and confirm the work of Reichenbach, and for his pains suffered much persecution from his "scientific" fellows.

Amongst those who attested from their own experience the existence of this odic force were many Austrians of good position—high government officials, physical scientists, and others—and amongst them, it is interesting to notice, Voigtländer, the optician.

We may say, briefly, that odic force was first detected, and is most easily demonstrated, as an appearance of light, or pale flame, emitted by magnets, by large crystals, and by many other objects under suitable conditions, but visible only to certain persons of a sensitive nervous temperament.

In 1871, Lord Lindsay stated that he, with Lord Adare, M. Bergheim, and his (Lord Lindsay's) brother-in-law had conclusively proved that Mr. Horne, with whom they were experimenting, was able to easily see, in perfect darkness, a large permanent magnet, which appeared as a light. For two years Lord Lindsay had been trying to obtain satisfactory evidence, but until this time "with only doubtful success."

A committee of the Psychical Research Society investigated the matter in 1883, and in June of that year (*Journal of Science*, p. 313) reported at some length, and concluded:—"In other words, our verdict must be given in favor of Reichenbach, unless some quite unexpected source of error is detected."

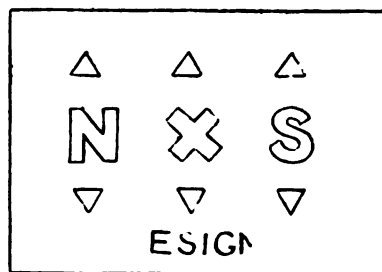
Professor Fitzgerald, who has written on the subject, appears perfectly satisfied as to the existence of odic force, and suggests a number of experiments, including photographic, but does not appear to have tried any of them.

J. T. Sprange, writing in *The English Mechanic* (May 18th, 1883, vol. 37, p. 233), discusses the work of Professor Barrett and his fellows of the Psychical Research Society, and says that he (Sprange) has repeated the experiments, and found "sensitives" who could see the luminosity of the magnets even in faint light.

So much for the testimony that odic light does exist; against which any amount of testimony of folks who are not able to see it is of no value whatever.

On several occasions it has been suggested that photographic tests would be valuable, but so far as our search into the subject can show, on only three or four occasions have photographic experiments been made. In all cases results

were obtained, but the conditions of the experiments appear to have been faulty; and, from what we know of thermography (see last issue), it seems as if similar results might well have been obtained by using unmagnetised iron bars instead of the magnets. The first experiment was made for Reichenbach by "M. Karl Schuh, a private teacher of physics in Vienna, known by his skill in Daguerreotyping. He shut up an iodised plate in front of which an open magnet was placed in a dark box, and at the same time deposited another plate in another dark case without a magnet. After some hours he found the former, when it had been treated with mercurial vapor, affected by light, the other not, but the distinction was not very strong." Another careful trial was made, giving an exposure of sixty-four hours, with the result that "taken out in darkness and exposed to mercurial vapor, the plate now exhibited the full effect of the light which it had received, over the entire surface." And Reichenbach adds, with the caution that marks the whole of his wonderfully



MR. BROOKS' EXPERIMENT.

extensive and wonderfully careful series of experiments and conclusions, that "unless other causes are capable of affecting the photographic plate after considerable time, it, in fact, must be light, real, though weak and acting but slowly, which issues from the magnet." The later experiment scarcely seems the result we should expect from thermography, but it might with advantage be repeated—and with comparison—exposures made with unmagnetised bars of similar size and temperature to the magnet.

The experiments made by William Brooks, of Reigate, were described before a photographic society in London, and the results given in a communication to *The British Journal of Photography* (March 9th, 1877, vol. 24, p. 112). Mr. Brooks says:—

"I have been experimenting in this peculiar branch of photography for many months past, to see if I could corroborate the statements made by Reichenbach in regard to the influence of a magnet on the sensitive plate. At first I obtained nothing but failures, and sometimes only a very faint indication in the plate; although with only gaining this faint phantom image it gave me encouragement, and now under certain conditions I can get an image on the sensitive plate in total darkness, in a shut-up box, showing that a sensitive plate is affected when brought within the influence of the

poles in a magnet. I made my experiments with an ordinary horse-shoe magnet about eight inches long, which I placed in a box, poles upwards, and above the poles a perforated card (about three-eighths of an inch above the poles of the magnet). The card is the size of a quarter-plate, $4\frac{1}{2} \times 3\frac{1}{2}$, thus:—

"The letters N S, the cross, and the little triangles are the perforated parts of the card. The part with the letter N is placed over the north pole of the magnet, and S over the south pole. When the card is in the position as above stated, the sensitive plate is placed one-eighth of an inch above the card, making half an inch between the poles of the magnet and the sensitive plate. I must not omit to mention that I blackened both the surfaces of the card with Indian ink. I exposed in this closed box in total darkness to the influence of the magnet, from three to fifteen minutes. Where the perforated parts of the card are sometimes I have developed a negative image and sometimes a positive image, as if ordinary daylight had had access to the plate; but the strangest part of all remains to be told, and it is this:—

"On exposing one plate, when I developed it, just below the letters N S and other openings, there was also developed the single line letters, as shown in the diagram of the card, E S I G N. The last is the part of the letter N. No letters were visible on the card. It was an ordinary printed business card that had been used, having all the printed matter blackened over. I looked at the plate and examined the card for a long time, and at last, by looking at an angle across the surface of the card, I could faintly (very faintly) just see slightly the letters described . . . on the developed plate they were perfectly defined. It would have been quite impossible to have photographed these letters on the blackened card with the camera and lens in ordinary daylight."

Here, again, there is a strange resemblance to some of the thermographic effects of Hunt, and especially to the thermographic results erroneously attributed to radiographic action early in the present year. The "strangest part of all" certainly has this appearance, and though it seems just as possible that the result may be caused by magnetic as by heat radiations, it is necessary, and not very difficult to decide which force was really responsible.

In *The Amateur Photographer* (June 12th, 1896, p. 511), a Mr. McKay is reported to have found that if a magnet is presented to the film side and a mass of soft iron to the other side of a plate, a developable image of the magnet will be obtained. He says that a permanent magnet weighing one pound will suffice, though an electro-magnet is better, but nothing is said as to the exposure.

In *Photography* (August 13th, 1896), Wm. Newell tells of an ivory chess-figure depicted on a sensitive plate by magnetic radiations. The exposure was one month, as a fortnight, previously tried, gave no effect.

All these reports are of sadly insufficient experiment, and give insufficient details even of the little work that was done; but the subject seems so promising that we trust these same or some other investigators will take it up with thoroughness. We will give some suggestions as to lines

that may be followed, and precautions that should be taken—with such particulars from Reichenbach's book as appear to bear upon the subject—but we strongly urge anyone who can do so to carefully read the book* itself, and to refer to it as their work progresses.

Many large crystals were found to give off strong odic light from their apices. The best results were given with large free crystals, having a natural unbroken point, and the substances apparently most suitable and most easily obtainable were heavy spar, fluor spar, and selenite; but probably the most important and interesting discovery from the point of view of the photographer, was the presence of this odic force very strongly in sunlight, and its ability to be carried along a wire. Reichenbach found that by carrying a copper wire from the cellar to the roof of the house, and attaching a copper plate (say one foot square), to the upper end of the wire, an appearance of flame would be caused to arise from the point of the wire in the cellar whenever the copper plate was placed in the sunlight. His various sensitive subjects were kept in the darkness, and had no possible clue save the appearance on the wire itself, to the changing of the free end from sunlight to shadow, but it was found that they invariably signalled the change as often as the plate was exposed or withdrawn.

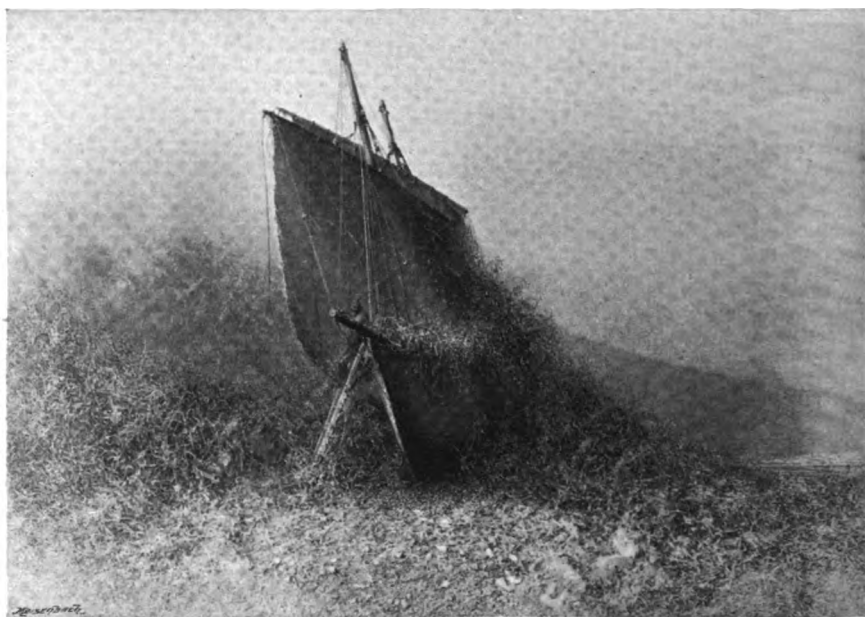
For our purpose these three instances—magnets, crystals, and sunlight are quite sufficient, though the whole of Reichenbach's voluminous work is intensely interesting.

The proof of whether these odic lights have any photographic action should be comparatively simple. Of course, if working with magnets, experiments may be made in what might be called contact printing, on the lines of the Daguerreotype experiments of Reichenbach, or the experiments recorded by W. Brooks, but it seems as if much more powerful results should be obtained by the focussing of the rays by means of a lens. Reichenbach found that the rays were easily focussed in this way, and that a sensitive person could see a spot of light on the wall, and accurately trace it from place to place where the light rays would have been focussed, had the magnet been replaced by a source of light and the lens used in practically the same position. He does not appear to have measured very accurately the refrangibility of the odic light, as compared with any of the rays in ordinary light. His first reference to the focussing of his rays shows that their refrangibility was roughly similar to that of light, and in another experiment, mentioned on page 583 of the English edition (1851) of his work, he refers to an experiment with a lens one foot in diameter with a focal length of about eleven inches. Placing a large magnet forty inches away from the lens, he found that when a screen was placed anywhere between twelve and sixteen inches from the lens, his sensitive experimenters could see a round spot of light, but that the most accurate observers stated that the spot was smallest and brightest

* "Researches on the Dynamics of Magnetism, etc., in their relation to Vital Force." By Baron Charles von Reichenbach; translated with notes by John Ashburner, M.D. London: Hippolyte Baillière, 219 Regent-street, 1851. Now out of print but may occasionally be obtained second-hand, or can be found in most good libraries.

when the lens was twelve inches away from the screen. With this to guide us, it should be a comparatively simple matter to make photographic experiments which would prove conclusively whether this odic force had any photographic action or not. We would suggest using the wire conducted into the sunlight, and a lens which would focus any rays proceeding from such wire on to a dry plate. It would be easy to make half-a-dozen experiments with the plate in different positions, in order to find the focal point. Of course, in such an investigation, patience would be needed, as the mere fact of having given a few hours, or even days, exposure without result, would

light varied considerably according to the position of the magnet and many other circumstances, and though we have not space to go into all the factors, we can briefly point out the differences caused by position of the magnet. When the magnet is laid horizontally with the north pole towards the north, the color of the emanation or light is described as blue, and as it is moved slightly towards the east of north it becomes darker blue, and eventually, at a position of about north-east-by-north, it is described as violet-blue. Taking the main changes in the apparent light as the magnet was moved in a circle in the vertical plane, it was found that when the north pole pointed



THE FAIRY CRAFT.—By Thomas Edge.

be no conclusive proof that the rays were not actinically active, though, judging from the small amount of evidence given by Reichenbach, it seems unlikely that any very lengthy exposure should be necessary if the rays were focussed.

In attempting to work with magnets the case would be probably much more difficult than with a wire taken into the sunlight, or even with crystals, yet, probably the magnetic part of the work would be the most interesting investigation. In this there would be a good deal of detail work, which, however, might be partially avoided by careful attention to certain hints that are scattered throughout the latter part of Reichenbach's book. He found that the apparent color of the magnetic

horizontally north, the appearance of the flame was dark blue; as it was depressed below the horizon it became violet-blue, but as it was further depressed it became greyish, raised slightly above the horizontal, so that the north pole pointed upwards, the dark blue became lighter. As the appearances with the magnet in other positions are described as grey, red, deep red, flame red, orange, gold and yellow, etc., it seems quite conceivably possible that the actinic value of the light, if it exists at all, may depend largely upon the position and direction of the magnet. We shall be very pleased indeed to hear from any of our readers who may take up this line of research.

"A Quiet Art."

With Illustrations by THOMAS EDGE, of Llandudno.

PHOTOGRAPHERS who have been twenty-five years in the profession—unless they neglected their journals in their earlier days, are well acquainted with Thomas Edge, of Llandudno, who for years was looked up to as one of the leaders in the craft. More

of thousands who visited Llandudno. Of late, however, Mr. Edge's sight has failed considerably, and he has been compelled to almost entirely leave photography and seek some other field for his artistic taste and ability. This he has found in "a quiet art," an invention all his own,

which, although its details are simple and not novel, has been modified by his skill until it is practically a new art.

The basis of the method is the old-fashioned model-making that flourished in the days of the Great Exhibitions and culminated in the triumph which was labelled—

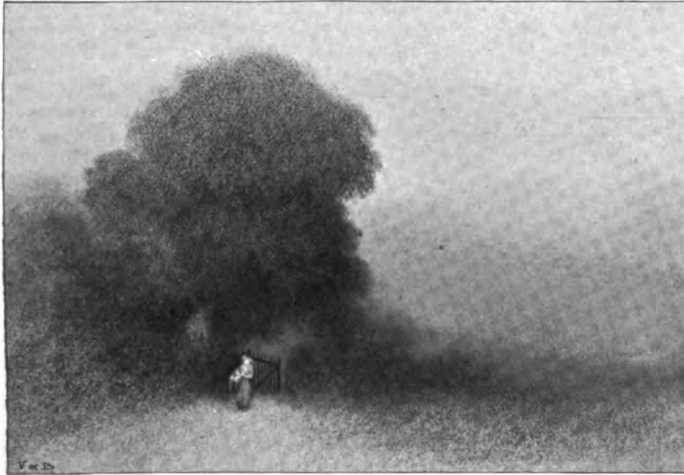
"Perseverance, cork and glue,
Eighteen hundred and sixty-two."

But in Mr. Edge's revival all the old stiffness and Dutch-doll-ificiality that we remember so well in the works of '51 and '62 is gone. Cork is no longer *the* material, but merely *a* material, and has been supplemented by every other kind of thing that

will go to the making of the model. Moreover, the model is no longer an end in itself, but

than one style, popular in its time, and never surpassed in its own way, did Mr. Edge introduce, and amongst photographers generally his technical skill was a matter for envy no less than a cause of emulation. A novelty that caused great wonder at the time of its introduction and that gave admirable results in the master's hands was the "natural background" portrait. The sitter was photographed against a light background, and by a simple method of double printing was made to appear standing in one of the typical scenes of North Wales. Why such portraiture entirely dropped out of use is not easy to understand, unless the work required more care and ability than the general photographer was able to give to it.

For so long a time has Mr. Edge's studio remained the most noted portrait gallery in Wales, and so well were Mr. and Mrs. Edge known, that a visit to them was one of the anticipated pleasurable items in the holiday trip



merely a stage in the manufacture of a photographic picture. The models, of wood, cork, metal, sea-weed, and a host of other oddments, are made only to be photographed, and after they

have served that purpose the whole fabric is pulled to pieces, to be reconstructed in another form, as the subject for another negative.

The whole of the work is done on a table three feet square, which is placed in a bay window, not only for the convenience of Mr. Edge in seeing as clearly as possible, but also that the lighting may be easily controlled. The arranging and lighting is a matter for serious care, even when a model is completed; and after the negative is made, Mr. Edge often works upon it to a very considerable extent. Thus, the total result is the outcome of many methods, all blended to give the picture first conceived by the artist's brain.

"The fairy craft" is perhaps the most distinctive and the most truly imaginative of all the pictures that I have seen; but the subjects are

charming in their variety, and the two small reproductions give an idea of two of the rural scenes. In all there is a breadth of treatment, a massing of light and shade, and a delicacy of touch seldom seen in pure photography; and whether the subject is a castle gateway, an old mill, a stranded boat, children by the wayside, a country lane with sauntering lovers, or a piece of pure landscape, the result is a charming picture.

Altogether, Mr. Edge is to be most heartily congratulated on this latest child of his fancy, and I think, Mr. Editor, that your readers are to be congratulated at this Christmas time on having the suggestion of such a charming evening occupation, to the success of which every member of a family can contribute.

C.G.G.

Photography of the Invisible without a Vacuum Tube.

Abstract of a paper by CH. V. ZENGER (Director of the Prague Observatory), in the "Bulletin de la Société Française de la Photographie."

IN A paper immediately preceding the present one the author calls attention to his successful photogram of the sun in 1879. The image on being enlarged three times showed the interior corona, the exterior corona with its re-curved texture, and, outside of all, a large number of flame-like protuberances. This successful result was obtained by employing a chloro-bromidised collodion emulsion mixed with ten per cent. by volume of an ethereal solution of chlorophyll, which appeared almost black with a beautiful bright red fluorescence. By using uranium salts in place of chlorophyll a very sensitive emulsion is produced, giving negatives rich in detail without danger of reversal of the image from over exposure.

By means of these plates the author has produced images of the corona with its protuberances, of a fall of meteorites into the sun, and of a comet partly outside the sun (the head and a part of the tail), whilst the greater portion of the tail, extending over nearly 40' of arc, was found projected on the solar disc. All these phenomena, whether belonging to the sun itself or not, and completely invisible over the disc, can be verified by means of a plate treated with nitrate of uranium.

When making experiments with the X Rays, M. Zenger found that by placing the hand on an ordinary dry plate enveloped in a single thickness of black paper in daylight a silhouette of the hand was obtained by an exposure of a few minutes duration. This, of course, is without using a Crookes' tube. If, however, a collodion plate to which uranium nitrate has been added be used instead of a gelatino-bromide dry plate, a much more rapid action is observed. The collodion plate is prepared in the ordinary manner (wet), the only alteration being that a ten per cent.

ethereal solution of nitrate of uranium is added to the emulsion in the proportion of ten parts by volume of the solution to ninety parts of ordinary chloro-bromidised emulsion.

In sunlight it is possible to render visible, on a fluorescent screen, the bones of the hand. The best way to prepare the screen is by fixing an unexposed dry plate in hypo-sulphite in the ordinary way, washing and dusting the plate whilst still wet with the double sulphate of uranium and ammonium reduced to a very fine powder, and passed through gauze to remove coarse particles. When dry the screen is placed in a printing frame. An arrangement similar to a camera is now fitted up, a spectacle lens of quartz with a focus of 4 to 8 inches taking the place of the ordinary lens. This is presented to the sun so that the light falls as normally as possible, the printing frame containing the screen is placed where the ground glass would be in the ordinary way, and the camera is focussed to find the distance at which the greatest fluorescence is obtained. The hand, a fish, or any other suitable object is now placed on the glass side of the screen (presumably through a hole in the side of the camera frame) and the bones of the hand, the backbone of the fish, etc., are seen with considerable sharpness. The thinner the plate and the more direct the rays of the sun, the greater will be the sharpness of the shadow. For this reason a plate of mica makes a better support for the screen than glass. By placing a mask of black paper cut to the shape of the hand between the hand and the screen, a greater sharpness is obtained. In conclusion, if the quartz lens be replaced by an ordinary photographic lens and a sensitive plate be inserted in place of the screen an actual photograph of the bones can be secured.

Trans., C.F.T.

Facts about Lenses.

(Concluded.)

BACK FOCUS.—This term, which is misleading, is used to indicate the distance from the back combination of the lens to the focussing screen when a distant object is sharply focussed.

EQUIVALENT FOCUS. CONJUGATE FOCI.—This is the true focal length of the lens. It is termed equivalent, as compared with a single lens, which would give the same sized image of an object at the same distance. Strictly speaking, it is the distance measured along the principal axis of the lens from the optical centre to the position of sharp focus for parallel rays. Any other focus is termed a conjugate focus. A conjugate focus may be either before or behind the lens. In the first case, it is termed anterior conjugate focus—distance of object from the lens—and in the second, posterior conjugate focus—distance of image from lens. If we place an object at a distance equal to twice the equivalent focus, the image is formed at an equal distance behind, and is the same size as the object; both the anterior and posterior conjugates are equal. If the object is brought nearer, then the image recedes from the lens—the posterior conjugate increases—and the image is larger than the object, and so on until we reach a position equal to the equivalent focal length of the lens. If the object is brought nearer than this, we see no image, it is formed at an infinite distance. If we bring the object away from the lens to a position slightly exceeding double the focal length of the lens, then the image is smaller than the object, and is formed somewhere between the position of the equivalent focus and a point along the principal axis of the lens, equal to double its equivalent focal length. As the distance of the object is increased, the anterior focus becoming greater than the posterior, the image becomes smaller and is formed nearer the equivalent focus; and this increase in the anterior and diminution of the posterior conjugate focus and reduction in the size of the image goes on until the image is formed at the principal focus of the lens. If now the object is moved further away the position of the image remains the same. Its size alters, becoming smaller.

It is often said that the conjugate foci are to be measured from the optical centre of the lens, but this is not always strictly correct. Really they should be taken from two points situated one on each side of the optical centre—centres of admission and emission. In a lens of the symmetrical doublet type, these points may be identical at a point midway between the two combinations (the mechanical centre), or they may be at a distance from such centre according to the way in which the lens has been made. It is usually sufficient for practical work to measure from the stop slit, and to compensate for any error by a slight movement of camera and re-focussing. Though for work in which no focussing screen is used, when the operations are done entirely by measurement, the true positions to measure from must, of course, be very accurately known.

When making photographs of an object to scale,

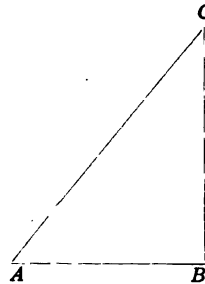
it is a great convenience to know exactly the distance to place the object and the focussing screen. For this information, a very simple calculation will suffice. We add the proportions (object to image) together, multiply the product by the focal length of the lens, and divide the sum obtained by each of the proportions taken separately. The resultants will be the desired conjugate foci—the distances respectively of focussing screen and object. Thus, suppose we have a drawing to copy to half the size, with a lens of 10-in. focal length. Proportions are 1 to $\frac{1}{2}$.

$$1 + \frac{1}{2} = 1\frac{1}{2} \quad \frac{15}{1} = 15 \quad \frac{15}{\frac{1}{2}} = 30$$

$$1\frac{1}{2} \times 10 = 15 \quad \frac{15}{1} = 15 \quad \frac{30}{\frac{1}{2}} = 60$$

As we are reducing the greater distance, 30 is the distance of the object to lens, and the smaller distances that of the focussing screen. These distances are reversible; the object can take the place of the image. Then the image formed at the other conjugate would be found to be twice the size of the original object, so that if we wish to enlarge we place the object at the smaller distance; and if we wish to reduce, at the greater.

ANGLE OF VIEW.—Sometimes it is desired to know the angle of view included by a lens. Draw a line of (*AB*) exactly half the base line of the plate in use, and erect at one end a perpendicular (*BC*) equal to the focus (posterior conjugate). Then join the points (*AC*). The angle (*ACB*), which can be measured with a protractor, multiplied by 2, is the angle of view.



In connection with above, the following table may be found useful and save some calculation.

When base line of plate is twice the length of focus	angle = 90°
" " " 1 1/2 " "	" = 82°
" " " 1 1/4 " "	" = 74°
" " " 1 1/3 " "	" = 64°
" " " equal to " "	" = 53°
" " " 2/3 of " "	" = 37°
" " " 1/2 of " "	" = 28°
" " " 1/3 of " "	" = 19°

If the focal length of the lens is doubled, the angle remaining the same, the size of the resulting picture is doubled (linear).

Suppose that we desire to know at what distance to place the camera, using a lens of certain focal length, so as to include a certain subject, the calculation is as follows:—Let *F* = focal length of lens; *P* effective size of plate; *B* distance apart of the boundaries of subject; and *D* the distance all in inches, then *F* : *P* :: *B* : answer in inches.

Suppose lens is 12-in. focal length.
 " effective size of plate, 10 inches.
 " boundaries of subject are 20 feet
 (240 inches) apart.
 $12 : 10 :: 240 :$
 $12 \times 2400 (200 \text{ inches.})$
 2400

Distance equals 200 inches or 16½ feet. Suppose by some circumstances the distance is fixed; say that it is the only place that we can take the picture from, and the size of plate also is fixed,

and we desire to know the lens to use, then using the same figures as before we have

$$\begin{aligned} F : P :: B : D \\ F : 10 :: 240 : 200 \\ \frac{10 \times 240}{F} &= 200 \\ \frac{2400}{F} &= 200 \\ F &= \frac{24}{2} \\ F &= 12 \end{aligned}$$

We must use a lens of 12-in. focal length.

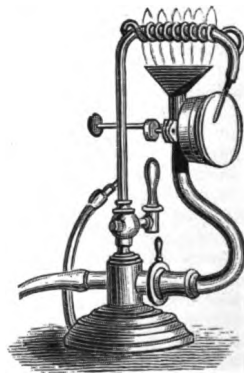
The Pyro-Hydrogen Light.

THE oxygen cylinder scare naturally causes attention to be turned to any possible substitute for the cylinders against which the railway companies have set their faces, and amongst other substitutes we may expect a revival of the very ingenious pyro-hydrogen light invented and patented by the late Walter B. Woodbury, and the late George Smith of the Sciopticon Co. The company has sent us a specimen of the apparatus, in which ordinary coal-gas from any household supply is used in an automatic blow-pipe supplied with air from a convenient foot-pump. The air passes through a long spiral of small tubing that is heated by a secondary Bunsen flame, so that an intensely heated blast is that which impinges upon the lime. Our first experiments with the light have been extremely gratifying. An exact comparison between the pyro-hydrogen and the oxy-hydrogen lime-light yet remains to be made, but we can confidently say that the pyro-hydrogen is fairly comparable with the older lime-light, and is immensely superior to oil and gas lamps.

The apparatus, as submitted to us, is prepared for a lime of the disc pattern, but it could be easily altered to take the more ordinary form of lime, and, no doubt, the Sciopticon Co. will make this modification. The air-pump and pressure-bag, too, though very efficient, and no doubt chosen because they can be sold cheaply, strike us as being scarcely powerful enough. They require almost constant pumping, and we think that if a rather more expensive outfit were offered, with a more powerful pump and much larger gas-holder, it would meet with general approval, though, of course, it would make a much less portable outfit for lecturers.

The little work we have done with this light has already pointed out to us a number of incidental advantages, not claimed by the makers, but which will probably be appreciated by photographers, who are bound to be, more or less, jacks-of-all-trades. For enlarging, the light seems the ideal of safety, economy, simplicity, and power for anyone who has an ordinary gas supply. The professional who uses the aerograph will find the air-pump and reservoir supplied with that instrument answers excellently for running the pyro-hydro light, so that he need not buy an extra pump, etc. Beyond this, the photographer

who works in glass-tubing, for making burettes, pipettes, wash-bottles, etc., or who ever does small jobs of soldering and brazing, will find the pyro-hydro lamp without its lime, a very useful blow-pipe flame. For the matter of that, if a piece of glass or metal tubing is attached to the air supply in place of the lamp, the result will be a piece of apparatus decidedly superior to the ordinary bellows for starting a fire. But we fear these suggestions may be considered frivolous.



Whether the new-old light can take the place of oxy-hydrogen for large halls, remains to be seen, but for small rooms, for home lantern work, and for enlarging, it undoubtedly has great advantages. On the *pro* side we place—great probability, instant readiness, absence of cost for oxygen and carriage-of-cylinder difficulties, freedom from danger, and a light decidedly superior to oil, incandescent gas, etc. On the *contra* side is the necessity for pumping the air, and a light not equal to the electric arc, and probably not quite equal to the oxy-hydrogen light.

A *Universal Index* of works on pure science is to be prepared by the Royal Society. The Federated Institution of Mining Engineers feels that applied science ought to be included, but failing to induce the Royal Society to do this, the institution has planned a separate index. To discuss the matter, it is proposed to call a conference of technical societies, and anyone interested may obtain further information from the Secretary, Neville Hall, Newcastle-on-Tyne.

Toning Platinum Prints by Catechu.

By A. VILLAIN.

(Secretary of the Société d'Etudes Photographiques, of Paris.)

THIS question of toning platinum prints has been given a prominent position by several workers and investigators (among them J. Packham and E. Demole), to whom the idea has occurred of endowing platinum prints with a sepia tone by employing catechu or catechine. Three varieties of catechu are known in commerce:—

(1.) Ordinary or brown catechu moulded on leaves; this variety is the most esteemed. It is dark reddish-brown in color with a brilliant fracture; and is almost entirely soluble in water, giving a highly-colored brown solution.

(2.) Yellow lump catechu: its tint is intermediate between that of brown and of yellow catechu.

(3.) Cubical or yellow catechu. This is very light, its fracture being dull with a matt surface. It is only slightly soluble in cold, but dissolves readily in boiling water.

Whatever be their source, the different catechus of commerce possess practically the same composition. They consist principally of catechine and catechu-tannic acid, mixed with variable proportions of brown substances, resulting from alterations in the preceding, and with extractive matter, catechine or catechuic acid. According to Ch. Etti,¹ to extract catechine, the catechu is dissolved in eight times its weight of water; the boiling solution is then filtered and left to cool for several hours. The catechine deposits mixed with catechu-tannic acid. When the solution has been thoroughly drained from the residue, the latter is dissolved in very weak alcohol, filtered and shaken with ether until all the catechine has been taken up by it. The ethereal solution leaves on distillation a thick residue, which redissolves in boiling water. On standing the catechine redeposits almost colorless. From a new solution in boiling water it can be obtained in small perfectly colorless needles. The mother liquor leaves a yellowish residue, which M. Loewe has demonstrated to be quercetin.

According to Auguste Guerout,² catechine can be prepared advantageously by exhausting catechu that has been finely powdered and dried at 100° C by anhydrous ether. On filtering and evaporating the ethereal solution on the water bath, there remains a muddy liquid, which, on being left exposed to the air for several days, absorbs water, and is converted into a crystalline mass of pure catechine.

The catechine appears in the form of microscopic needles with a silky lustre. It is very slightly soluble in cold water, but dissolves easily in boiling water, alcohol, and ether. The solution precipitates albumen, but not gelatine. This is the *modus operandi* recommended by J. Packham: First a concentrated solution of catechu is prepared, seven grammes of ordinary catechu, reduced to powder, being boiled for ten minutes

in 150 cc. of water. After cooling, 30 cc. of alcohol are added and the whole is filtered.

To make the toning bath, 5 cc. of the concentrated catechu solution are added to 450 cc. of water at 60° C. This temperature will be maintained during toning, which lasts usually for several minutes. The operation is conducted in diffused light to avoid darkening of the whites. The toning can only be accomplished satisfactorily if every trace of iron has been removed from the prints by treatment with hydrochloric acid, followed by thorough washing. It is necessary also that the prints should be kept dry and away from the light for several days before toning.

M. Demole recommends the employment of catechine, one of the principal constituents of catechu.

Eight grammes of catechine are added to 100 cc. of water, which is then boiled for several minutes. From this an incomplete solution of catechine results. The heat is now withdrawn and 30 cc. of concentrated alcohol is added, and the whole, after being left to cool, is filtered. Two cubic centimetres of this solution are added to 500 cc. of water heated up to 50° C. The prints are then placed in the bath and tone very slowly, and little by little, giving sepia tones warmer and warmer by degrees.

Without pretending to attach too great a value or importance to this method of toning platinum prints, I have wished to verify the experiments of these gentlemen; my profession of dyer giving me facilities for carrying out this verification, catechu being a product largely employed in dyeing.

Here is my conclusion: The toning is an actual dyeing, the catechu or catechine employed acting in presence of platinum as in the case of a metallic mordant, and becoming fixed according to the quantity of platinum deposited on the print.

All the tinctorial products are fixed by metallic salts acting in a similar manner. I wish to remark, however, that catechu is one of the most permanent, if not the most permanent, dye employed. M. Demole, in recommending the use of catechine, is well within the truth, for it is of great importance to be careful of the whites of the prints which are so difficult to preserve in this kind of toning. Not only do the platinum prints contain, in addition to the salt of platinum, a salt of iron, but also a certain quantity of gelatine or other colloid substances. Now the catechu-tannic acid contained in brown catechu, precipitates the gelatine and fixes it, consequently, over the whole proof. Catechine does not precipitate gelatine, but throws down albumen and certain other colloid substances, and is more easy to eliminate by washing with distilled water than catechu-tannic acid.

Pure whites can therefore be obtained more easily with catechine than by using brown catechu.

According to Messrs. Demole and Packham this kind of toning occupies a long time; there is,

¹ Annales de la Société Chimique.

² Treatise on Dyeing by Grace Calvert.

however, a means of hastening the action, giving the print at the same time a great intensity of color and a permanency far more complete. For this purpose it is sufficient simply to complete the dyeing operation, *i.e.*, to render the oxidation of the catechine or catechu complete by a passage through bichromate of potassium. This is how I should recommend those who wish to try this method of toning to proceed:

Tone with catechine, then after ten or fifteen minutes remove the print from the bath, wash it finally with pure water to eliminate all the unfixed catechine, pass it through a bath of 1% bichromate of potassium heated to about 40° C., allow it to remain for a few minutes, then wash it sufficiently

with cold water to remove the excess of chromate. It only remains then to pass the print through a very dilute solution of alum. The action of the bichromate will render the sepia tint obtained extremely permanent.

NOTE.—Catechine (or catechuic acid) is the acid from which pyrocatechine is obtained by distillation. The retail price of catechu varies from 6d. to 1s. per lb., according to quality; the Bengal or Bombay catechu is the "brown catechu" mentioned in Villain's paper, and is the variety to use.

C.F.T.



Erratum.—In article "Facts about Lenses," page 271, second column, line 31, for 400 read 1600, and for 64 read 25.

An Error.—In PHOTOGRAMS OF '96 a few words of criticism on page 97, are attached in error to the picture "The Silent Mere," by E. Cecil Hertslet. They were intended for "Evening," No. 63.

Our Snowball Scheme is being very well taken up, but we want to see hundreds where there are now only dozens of forms sent in. A nucleus form, giving to anyone a good chance of winning prizes from sixpence to £250, and upwards, is to be found in each copy of PHOTOGRAMS OF '96, and also in each copy of THE PHOTOGRAM for November. In both cases full particulars are given. There is no risk and no entrance fee or cost of any kind.

Our Xmas Card Competition, which closed on November 20th, brought many charming works, and we are gratified by knowing that the competition has caused many people to turn their attention to a subject which they would otherwise have neglected, with results very satisfactory to themselves. Several of our friends have written in some despair that although they started with the idea of competing, they failed in their effort to produce pictures of the stipulated shapes and of decorative character.

The Photographic Guild.—The month's correspondence on this subject has been very encouraging, and in accordance with the promise in our last, we give, in our advertisement columns, an outline set of rules, based upon suggestions received from our correspondents. Up to December 31st we shall be pleased to receive names of intending members, with suggested amendments to the rules. As early as possible in January, the rules, with all the amendments, will be printed and circulated to all who have signified their intention of joining; with a voting-paper. One week after such circulation the voting-papers will all be opened, and the rules or amendments as approved by the majority will become the con-

stitution of the Guild. The success of such an organisation depends upon the number of the members. Will you be one?

Prize Competitions.

The competition which proved most popular during the current year will be repeated for the next volume. We therefore offer

£5 gs. for the best Article

on any photographic subject, received on or before April 30th, 1897.

We want articles dealing with practical photography, and the practical applications of photography, rather than articles of purely controversial or literary interest.

£5 gs. for the best Article

on any photo-mechanical subject received during the same time.

Consolation Prizes.

Articles failing to secure the prizes will be used, if suitable, and paid for at our regular magazine rate of

£1 per 1,000 Words.

Any competitor may send as many articles as he wishes, and we are desirous of receiving some of them as early as possible. Articles used before the competition closes will be paid for, and should they be prize-winners the difference between magazine rate and the amount of the prize will be paid at the close of the competition.

Constructive Criticism.

A Prize of £3 3s.

will be given to the competitor placing the twelve best pictures of the year, as reproduced in our Annual, PHOTOGRAMS OF '96, in the order nearest to that assigned to them by our own art critic.

The lists must be given on a form, which will be printed in our next issue, and must reach the office of THE PHOTOGRAM not later than March 31st, 1897.

A Prize of £1 1s.

will be given for the most correct placing of the twelve *most popular* pictures in our Annual, PHOTOGRAMS OF '96. The popularity will be judged by the voting in the competition, and the prize awarded to the one whose list is most nearly in the order of the total vote.

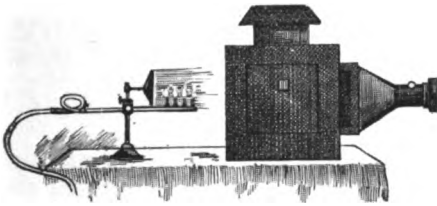
The lists must be given on a form printed in our next issue, and must reach the office of THE PHOTOGRAM not later than February 28th, 1897. Only one list may be sent by any one competitor.



In reviving this old heading, to take practical notes (old and new) and brief articles, we remind our readers that it is from their practical experience we wish to draw the suggestions, and that we are willing to pay for all that are accepted.

For next month we specially invite notes on alterations and conveniences that can be fitted to cameras. Where possible, a small sketch (no matter how rough) should be used to save words.

Since Acetylene Gas seems to be decidedly the coming thing, a diagram of an arrangement by which it has been applied to the optical lantern



in America may interest some readers. The whole arrangement should be obvious from the sketch. Of course when in use the lights will be enclosed in the lantern body.

Here is a little notion from a French catalogue. It represents a changing tent which requires no sticks nor staves to hold it open, as its outline consists of a series of hollow chambers which are filled with air by means of the little pressure injector shown at the side. Though this particular form seems to us unnecessarily clumsy,

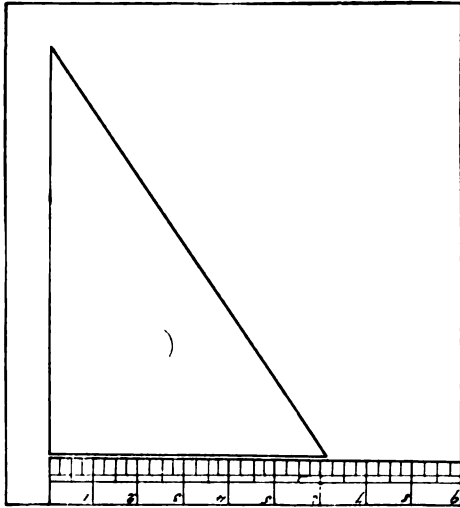


the idea of an inflated tube used to keep open such a tent seems a decidedly good one, and it could easily be applied to a tent that would be extremely small and portable, but that would give ample room for plate changing, or even, on a pinch, for a trial development.

A Print-Trimming Arrangement.—

Cutting shapes for prints are notoriously incorrect, only about one in ten having really true right angles; besides this they are much more likely to slip than is the arrangement here shown. The measurements given are for prints of any size up to whole plate. Materials required are a piece of thick plate-glass (or hard wood) 10-in. \times 11-in., a box-wood ruler (a foot long) such as is used in schools, and a set square with a side nine inches long.

Cut three inches off the ruler and cement it on to the glass (or wood) in the left-hand top corner, taking one of the ten inch lengths as top, thus leaving an inch clearance on the right. Alter the figures on the ruler to make them number from right to left as illustrated.



Then with any print that is to be trimmed first cut off one side and push the cut edge truly against the ruler, when, by running the set square along till it is flush with the end of the ruler as shown in the diagram, a clear cut can be made on the right and a true rectangle obtained. The print can also at the same time be cut to any required measurement by making use of the scale on the ruler.

If wood be used as the bed, the grain should run against the cutting way, but glass is preferable. Coaguline is a good cement, while fish-glue is excellent and cheaper. The ruler can be obtained for twopence, the set square about ninepence, and the glass for a few pence.

RICHARD W. K. GODWIN.



Manufacturers sending apparatus for examination and notice, should state distinctly whether, and when, they wish it returned. We specially request that all articles which are not too bulky, be deposited for at least six weeks from date of issue of the magazine in which they are noticed.

The following are the new advertisers, and most important new goods advertised in the present issue (with possible omissions of those received at the last minute). In writing to advertisers please mention THE PHOTOGRAM.

New Advertisers.

Clement & Gilmer, Paris.
Wellington & Ward, Elstree.
Imperial Decorative Glass Works, Poplar.
T. H. Powell, Denmark-hill, S.E.
The European Blair Camera Co., Southampton-street, London, W.C.
Jonathan Fallowfield, 146 Charing Cross-road, W.C.
Penrose & Co, Amwell-street, E.C.

New Goods, etc., Advertised.

The Vitagraph. Clement & Gilmer.
Opaline Plates and Improved Backs. Imperial Decorative Glass Works.
The Wellington Papers. Wellington & Ward, Elstree.
Compressed Developers. T. H. Powell.
Blair's Films. The Blair Camera Co.
Lantern-Slide-Making Cameras. J. Fallowfield
Process Work Appliances. Penrose & Co.
The Photogram Calendar. THE PHOTOGRAM, Ltd.
The Photographic Guild. THE PHOTOGRAM, Ltd.

Novelties.

The following are amongst the new goods announced since our last issue went to press. The date is that on which samples were received by us. The asterisk () indicates that samples are deposited at our office for inspection. The prices are as advertised, retail. Addresses are omitted in the case of well-known firms of manufacturers.*

Manufacturers are requested to post us as early as possible with particulars of their new goods.

APPARATUS.

*Opaline Stereoscopic Slides.** October 30th. Price 6d. each. Fortescue Mann, 48 Elgin-avenue, London.
*Primus Diagram Lantern Plates.** November 3rd. Box containing six slides and style, 1s. W. Butcher & Son.
*Primus Notice Lantern Plates.** November 3rd. Price, 1s. per box (six plates). W. Butcher & Son.
*Primus Lantern Slide Masks.** (Drinkwater Butt series.) W. Butcher & Son.
*Primus Photogravette.** November 3rd. Price, 2s. 6d. W. Butcher & Son.
*Bom Improved Film Developing Lifter.** Prices, from 4d. to 2s. each. Josiah Pumphrey, Birmingham.
Sanderson's Camera. November 4th, 1896. Prices from £4 4s. upwards. George Houghton & Son.
Patent Portable Lantern. New pattern. In travelling case, complete £3 3s. Lambert Matthews, 97 Queen Victoria-street, E.C.

The Moonlight Patent Lamp Co., Ltd., have removed to 126 Paddington, Liverpool.

The Gold Medal of State for industrial achievements has been awarded by the Emperor of Germany to the firm of C. P. Goerz.

Lumiere's Kinetograph is now being sold in Great Britain, the Colonies, and America, by Fuerst Bros. No apparatus can be delivered before May next.

Acetylene Apparatus for cycle head-lights, carriage lamps, etc., a new portrait installation for studio use, an enlarging lantern, and a substantial generator for household and studio use are being rapidly prepared for the market by A. and J. Smith, Aberdeen.

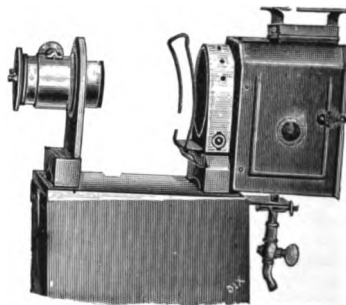
Film-Lifters of a new pattern and in various sizes, including several specially intended for pocket Kodak films

have just been put on the market by J. Pumphrey, of Birmingham. For the small films various sized lifters are made, to take from one to twelve exposures.

A New Film of great promise was shown at a recent meeting of the London and Provincial, by T. E. H. Bullen. It is the invention of Mr. Banks, is much cheaper than celluloid, and has a great number of other advantages. It will be placed on the market by the Gem Dry Plate Co.

A New Manifesto on behalf of the Otto print-out paper reiterates the maker's claim that Otto paper is the only print-out paper which can be safely toned in a combined bath as it is the only paper that will tone in a combined bath without lead or alum. The specimens issued with the circular are exceedingly beautiful examples of photographic printing.

Matthews' Patent Portable Lantern, in its latest new pattern, packs into a polished wood case about eight inches cubic, and opens out into an excellent open-stage lantern



with acetylene burners. It can also be supplied with the incandescent gas light or three-wick oil lantern. It is the acme of convenience, handsome, durable, and very inexpensive; in fact, the price is as compact as anything about the lantern.

Sanderson's Patent Camera with the improved front described in our last volume, has been further improved in many details. The examples shown at the recent R.P.S. exhibition, and described and illustrated in a list just issued by the sole agents, George Houghton and Son, show that the details are worthy of the excellent ideas embodied in the principles of the design.

Opaline Stereoscopic Slides, consisting of excellent silver prints mounted on glass, backed with grey card, and neatly bound and tiled, are being pushed by Fortescue Mann. The excellence of the idea is obvious, and the slides submitted to us by Mr. Mann are very good examples of stereoscopic work. Our only objection to the series is the price, which, at 6d. retail, seems really ridiculous.

The Fallowfield Christmas Cards are quite different in design and style from any of the numerous series we have already noticed. They include a large variety of designs, all of them good and chaste, and most of them intended for slip-in pictures. The general sizes are carte-de-visite, quarter-plate, and cabinet, and the photographer who cannot make up a satisfactory set of Christmas cards from the many charming series now on the market must be indeed difficult to please.

The Primus Photogravette is a simple apparatus consisting of four strong spring clamps, two cut-out boards for use as plate-holders, a sheet of plate glass, and a pulp slab, the whole being intended to enable prints in any book to be copied by photography without the aid of a camera. Of

course such an apparatus can only be used when the print is on one side of the paper only, and the other side left blank and clean, but there are doubtless many applications for which it will prove useful. The instructions given with the outfit are simple and can be followed by anyone who knows how to develop a negative.

The Latest Primus Specialties (lantern), include a new diagram slide-plate, a "Notice" lantern-plate, and a new box of lantern masks, containing several unusual sizes designed by Drinkwater Butt, the well-known professional. The "Notice" plates are clear glass, prepared on one side with a perfectly transparent substance, which allows of writing upon it with pen and ink or pencil. They are specially intended for the preparation of notices of elections, cricket matches, etc., etc. The diagram lantern-plates are provided with a black film, and the box contains a mounted writing point with which the films can be scratched to show any desired drawing or writing in white letters with black ground. For our own work we prefer a much stronger style than the one provided, but the surface for writing is all that can be desired, if the style is strong enough. These plates have the great advantage over smoked glass that the film is hard and shiny, so that no care is needed to protect the drawing by means of a cover glass, and there is no liability of its being scratched or erased by any reasonable amount of careless handling.

CATALOGUES.

W. BROOME's fifth net price-list offers a good variety of lenses, cameras, and materials at special prices to the trade and the profession.

INSTRUCTIONS FOR WORKING the N. and G. Cameras are handily given in a neat pocket booklet just received from Newman and Guardia.

THE PHOTO-DECORATED TILES of George H. Grundy are illustrated in a catalogue of subjects consisting of reduced collotypes from all the stock negatives.

THE CANTILEVER enlarging apparatus, in almost endless variety of styles to meet different requirements, is described and illustrated in the "interim" list of William Hume.

A SUPPLEMENTARY LIZARS' LIST gives us everything in lanterniana up-to-date. A separate list of second-hand, shop-soiled apparatus will prove attractive to those in search of bargains.

RADIOGRAPHIC APPARATUS is fully listed in a recent catalogue of F. C. Allsop, 97 Queen Victoria-street, E.C. A special feature is the listing of parts and materials for induction-coil making.

FURTHER LISTS from Wellington & Ward prove that the firm does not mean to let slip any opportunity of pushing the claims of its distinctive specialties. We take it that the new paper films are winning golden opinions.

WOODBURY LANTERN SLIDES, mostly of well-known and favorite subjects occupy most of the Sciophton Co.'s list; but there are also particulars of a portable screen, the Sciophton lantern, and many minor accessories.

WILFRED EMERY's neat price-list becomes a little more complete with each issue and now seems to include every class of work "for the trade." A special line, of which many photographers might make better use than they do, is carbon miniatures on ivory. They are very attractive, and to many customers are entirely unknown.

Exhibitions and Competitions.

These particulars are given when the Exhibition is first announced, and again when it is time for entries to close. The Secretaries' names are only given when the Exhibitions are open to receive work.

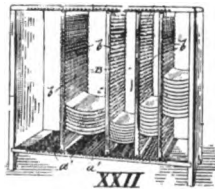
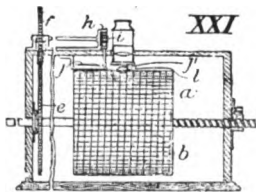
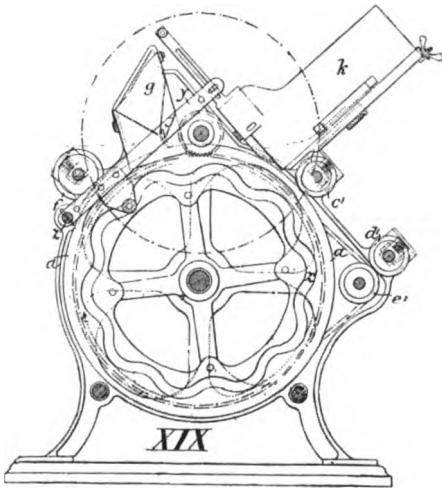
Name of Exhibition.	DATES.			Prizes.	Open Classes.	Address of Secretary.
	Entries.	Pictures.	Exhibition.			
1. Romford and District			Nov. 26-27			A. John Ormiston, 4 Laurie-sq., Romford.
2. Photographic Soc.						
3. Bristol International	Nov. 1.	Dec. 1.	Dec. 14 to Jan. 13.			M. Lavington, 20 Berkeley-sq., Clifton.
4. Austin Edwards		3rd of each month.		Frena Hand-Camera. Cash. S.B.C.		Austin Edwards, Willoughby-lane, Park, Tottenham.
5. Hearth & Home...		Dec. 10.			A.	6 Fetter-lane, E.C.
6. Aintree Photographic Society ...	Nov. 21.	Nov. 28.	Dec. 4-5.		5 A.	2 Tilney-street, Orrell-park, Aintree, Liverpool.
7. India			Jan. & Feb.			R. Child Bayley, 12 Hanover-sq., W.
8. Society of Lady Artists			January.			Miss F. E. Partridge, 9 Nottingham-pl., W.
9. Weymouth			Jan. 14-15.			E. E. Bennett, 10 Newberry-terrace, Weymouth.
10. Edinburgh			April, 1897.			
11. Photographic News						
12. Lantern Slide Competition	Dec. 31.	Dec. 31.		Cash. S. B.	All.	The Photographic News, 22 Farnival-st., E.C.
13. Stockport Society			Dec. 28 to Jan. 2.			T. Gould, Chester-gate, Stockport.
14. Borough Polytechnic						
15. Photographic Soc.			Dec. 28 to 31			P. C. Cornford, 103 Borough-road, S.E.
16. Photographic News	Dec. 7.	Dec. 7.		Cash. S. B.	All A.	The Photographic News, 22 Farnival-st., E.C.
17. Hand - Camera Competition						
18. Arts' Club, Manchester			Dec. 1 to April.			

A—Amateur. P—Professional. G—Gold Medal. S—Silver Medal. B—Bronze Medal. C—Certificate.

Cm—Complimentary Medals given to every exhibitor whose work is hung.

About Patents.

- 9,807. *Plate-Changing Apparatus*. M. A. Weir, Elm Bank-place, Kingston-on-Thames. May 17th, 1895.
 9,881. *Zoetropes, Kinetoscopes, etc.* P. M. Justice, 55 Chancery-lane, London. May 18th, 1895.
 10,037. *A Duplex Camera*. F. Haarstick, 34 Bolkerstrasse, Dusseldorf, Germany. May 21st, 1895.
 10,474. *Kinetoscope Camera*. Birt Acres, Clovelly Cottage, Barnet, Herts. May 27th, 1895.
 10,666. *Stripping Films*. J. B. B. Wellington, The Elms, Elstree, Herts. May 29th, 1895.
 10,749. *Macfarlane Anderson's Three-Color Process* (see our issue of September). P. Jensen, 77 Chancery-lane, W.C.
 11,092. *Print-Mounting Machine*. C. Hoddle, 164 Camberwell New-road, London. June 5th, 1895.
 11,194. *Focussing Hood*. G. Franke, 3, Schuhmannstrasse, Berlin. June 7th, 1895.
 11,302. *Cameras, Shutters and Changing Boxes*. J. Zion, 7, Rue de Jony, Paris.
 11,608. *Changing Box*. W. Stanbury, 12 Charterhouse-street, London. June 14th, 1895.



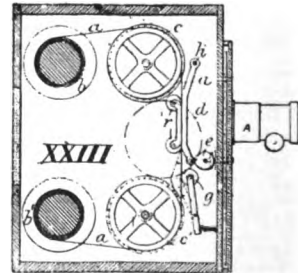
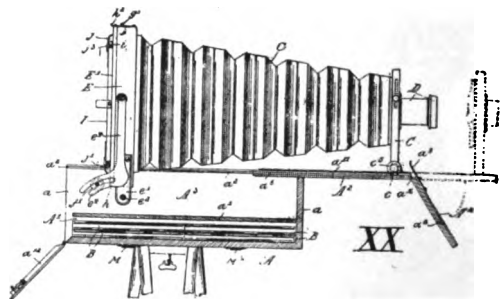
9,881. *Zoetropes, Kinetoscopes, etc.* Relates to a means for viewing a series of pictures successfully so as to imitate movements, etc. The pictures (a) are mounted in a helical strip on a drum (b) to which a rotary and forward movement is imparted by means of a screwed shaft. The moving pictures are observed through a slit (j¹) in a rotating disc (j), which is geared with the drum by means of toothed wheels (e, f), a worm wheel (h), and a worm (i). In the form shown the light for illuminating purposes passes through a funnel (l) and is reflected from the pictures, but in a modification the drum may be made of transparent material and illuminated internally, the pictures being seen by transmitted light. Fig. XXI.

10,474. *Kinetoscope Camera*. Relates to an automatic camera for taking a series of instantaneous pictures in rapid succession on a film, which may also be applied for viewing or projecting the pictures. The film (a) is pulled off a spring roller (B) and delivered on to another (b¹), being actuated by two drums (c and c¹) having pegs which fit into perforations in the film. The film passes over two supporting rollers (r, r) behind the lens (a), and is held stationary while the disc shutter (f) is making the exposure by a lever (d) hinged

at (h). This lever (h) is caused to clip the film at intervals by the action of a cam (e), actuated by gearing from the shutter (f). The spring lever (g) takes up the slack of the film, and thereby enables the drums (c and c¹) to rotate continuously. Fig. XXIII.

10,666. *Stripping Films*. Relates to a method of preparing stripping films. A sheet of paper is first coated with a layer of gum or varnish, preferably gum sandarac or gum copal, dissolved in methylated spirit. On this a layer of insoluble gelatine, either sensitised or not, is coated. When not sensitised, another coating of sensitised gelatine is coated over it. After development, fixing and washing, the gelatine film is stripped off the paper, squeezed on glass, or the like, to dry, and then used as a negative. The gelatine may be covered to prevent halation.

11,092. *Print-Mounting Machine*. Relates to a machine for pasting photographs and the like on cardboard or similar mounts. The wet print is placed on a revolving cylinder or drum (a), face downwards, and registering with a line on the cylinder. It passes first under a roller (f) by which it is partially dried, then under a pasting trough (g) with flexible spreading flap (j), then under a receptacle (k) containing the



mounts. A mount is pushed out at the right moment by a pusher, which is reciprocated by a zig-zag cam (x¹) on to the end of the drum (a), and a lever (y) pivoted at (z). The mount and print pasted together are passed under a roller (c¹) and finally delivered finished by two rollers (d¹ and e²). A zig-zag cam may be mounted on the other end of the drum (a) to adapt the feed for a different size of photogram. Fig. XIX.

Principal American Patents.

- 569,328. *Photographic Camera*. Joseph M. Elliott, Philadelphia, Pa. February 10th, 1896.
 570,338. *Photographic Card Drier*. Norman H. Reed, Santa Barbara, Cal. July 10th, 1896.
 569,510. *Art of Manufacturing Photographic Mounts*. James W. McCabe, New York. May 28th, 1896.
 569,761. *Photographers' Embossing-Press*. Thomas H. McCollin, Philadelphia, Pa. November 16th, 1894.
 569,875. *Chrono-Photographic Apparatus*. Marie J. H. Joly, Paris. June 5th, 1896.
 569,895. *Curtain Slide Camera Attachment*. William Trueman, New Haven, Conn. December 16th, 1895.

569,328. *Photographic Camera*. A camera-holder and support, consisting of a box provided with an internal partition dividing the same into two compartments, one to receive a camera and its accessories, and the other plate-holders, a removable two-part lid, adapted to be slid in the sides of said box and provided with a rack and a pinion connected with the bellows of said camera and adapted to be extended by the travel of said pinion in connection with said rack, substantially as, and for the purposes, set forth. Fig. XX.

570,338. *Photographic Card Drier*. A case for holding photogram card mounts, comprising in its construction a suitable frame having top, bottom and end portions, the top and bottom portions being provided with transverse grooves or corrugations, and removable partitions in said grooves or corrugations, one face of a partition being smooth and the other face provided with transverse grooves or corrugations, substantially as, and for the purpose, described. Fig. XXII.

569,510. *Art of Manufacturing Photographic Mounts*. As an improvement in the art of manufacturing photographic mounts, the mode of applying the panel or border to the surface of the cardboard, which consists in placing together a sheet of cardboard and a sheet of ornamental paper, having a dry adhesive substance of the character specified, and in then causing said ornamental paper to adhere to the cardboard by subjecting the same to heat and pressure.

569,875. *Chrono-Photographic Apparatus*. In an apparatus of the kind described wherein a film having perforations at regular intervals therein is employed, two toothed rollers, the teeth thereon engaging perforations in the film, one for unrolling and the other for re-winding the film, means for rotating the rollers at a uniform continuous movement, means for forming a loop in the film in advance of the dark chamber, and a frame reciprocating at right angles to the normal line of feed, and acting to periodically form a loop in the film after it leaves the dark chamber, whereby the film is passed through said chamber by an intermittent movement, substantially as described.

Current Topics

A One-man Show of the work of J. Craig Annan has just been held by the Glasgow Evening Times Camera Club.

The last of the Lantern Society was seen in the auction rooms of J. C. Stevens, on October 23rd. A good society, with able and energetic officers, killed by popular indifference.

The Taber bas-reliefs, now being shown at the Camera Club, are striking and wonderfully attractive examples of photography. The prints are embossed from behind by means of dies that follow the outlines and relief of the subject, and the life-likeness of the result is almost past belief.

The New Blood resolution which was referred to the Council of the R.P.S. by an overwhelming majority of a general meeting of members in December last, has at length (November 10th) been formally carried by the council, so that there is every prospect of the enlightened policy recently adopted by the parent society being vigorously conducted in the future.

A terrible accident occurred in Sutton Park on October 23rd to J. F. Joplin, until recently partner in the firm of Beaufort, photographer, Birmingham. Mr. Joplin was riding in Sutton Park when his horse bolted, and rushing under a tree, struck the rider against a bough with such violence that his neck was broken, and the skull fractured. Death was instantaneous.

E. Cecil Hertalet, who has just been appointed Her Majesty's Consul-General at Havre, is a highly-esteemed member of the R.P.S., of the council of which society he became a member at the last general election. His picture, "A Wayside Shrine," hung in the R.P.S. exhibition, and reproduced in PHOTOGRAMS of '96 is a scene from the North of France, in the district where his new official home is to be.

The Portraiture Exhibition at the Camera Club is very well worth seeing. Collected by George Davison, it is a very catholic and representative show of some 150 pictures, with the advantage over most important photographic exhibitions, that it is not confined to new work.

The gems of the two great exhibitions for several years past are to be seen, together with masterpieces of the old days, including calotypes made by D. O. Hill in 1846, and portraits of a little later date by Mrs. Cameron.

The Parisian Gendarmes were recently outwitted by R. W. Paul. Forbidden to point a camera at the procession of the Czar, he hired a room, and a lady to stand in front of his camera until the Czar was passing, when the lady stepped aside and a long kinematograph film was exposed. Owing to the crowd it was some minutes before the gendarmes could cross from the opposite side of the road. Meanwhile, the camera had been placed in a box, and buried in a hole already prepared in the garden. The photographer escaped "over the garden wall" into the crowded streets, but late at night he returned, dug up his camera and made his way to London.

The Traill-Taylor Memorial Fund now amounts to about £230 and a general meeting of the subscribers has appointed a committee of ten London and ten country members to invest the money and administer the proceeds. The intention is to establish an annual medal for a lecture on some photographic subject—preferably based upon original research. The lecture, delivered in London or the provinces, according to circumstances, will be available for publication in the photographic press, as well as for delivery before photographic societies. Alexander Mackie will continue as secretary for the present, and surely there could be no better secretary than the man who has hitherto conducted the business of raising the fund.

Obituary.

By the death of Napoleon Sarony, on November 9th we lost one of the most picturesque and notable figures connected with photography. Mr. Sarony was born in Quebec, but in 1866 came to England, where he settled in Birmingham. Before very long, however, he returned to America, and began a business in New York. In the course of a long professional life he rose to the position of the best-known photographer in America, the man who had photographed everyone worth knowing, and who was regarded as an equal and a friend by many of his most distinguished sitters. Eccentric with the usual eccentricity of artistic genius Mr. Sarony conformed to none of the conventions of middle-class studio portraiture, but his poses and arrangements were often very original, always striking, and generally, very successful. Versatile in the extreme, he was a born actor, a delightful story-teller, a sculptor of some little ability, and a painter of considerable power and genius. He was often urged to leave photography for painting, but ever remained faithful to his camera. As a man who had made a position entirely by his own efforts, and in spite of considerable difficulties at times, he was always proud of his position, and never objected to be called, as he often was, in friendly banter, "the Napoleon of photography." Many of the most popular styles in photographic portraiture were originated, or introduced to the States, by Mr. Sarony, and his latest effort, which resulted in an enormous success, was what he called "pictures from life." These were figure-studies, often with elaborate surroundings, of the styles recently made familiar in Britain by W. and D. Downey. The free use of the nude figure in some of these studies was at first met by adverse comment, which, however, rapidly died away when it was found that the treatment, though free, was always perfectly modest.

The death of Mr. Sarony is supposed to have been due to apoplexy, for when his wife tried to awaken him on the morning of November 9th, life was quite extinct.



1. "Gut Licht." By Hermann Schnauss. Price, 1.50 marks; post free, 1.75 marks. Apollo, Dresden.
2. "Modern Photography." By Harold Baker. Cloth bound, 6d.; post free, 7d. London: Iliffe & Son.
3. Photographischer Almanach, 1897. Price, 1 mark; post free, 1 mark 17 pfen. Ed. Liesegang, Düsseldorf.
4. The Photogram Wall Calendar. Price, 6d.; post free, 7d. Dawbarn & Ward, Ltd., 6 Farringdon-avenue, London, E.C.
5. "Induction Coils and Coil-making." By F. C. Allsop. Price, 3s. 6d.; post free, 3s. 9d. London: E. & F. N. Spon, 125 Strand.
6. "First Aid in Photography." By J. R. Courtenay Gale and James Cadett. Price, 1s.; post free, 1s. 1d. Cadett and Neall, Ashted, Surrey.
7. "La Photographie des Couleurs." By Leon Vidal. Price, 2fr. 75c.; post free, 2fr. 90c. Gauthier Villars et Fils, Quai des Grands Augustins 55, Paris.
8. Views of Westminster Abbey. By Freeman Dovaston. Price, 1s. net; post free, 1s. 1d. Freeman Dovaston, 5 George-street, Euston-road, London.
9. Ecclesiastical Buildings, a souvenir of Shrewsbury, from negatives by W. W. Naunton. Price, 1s. 6d.; post free, 1s. 8d. Adnitt and Naunton, The Square, Shrewsbury.
10. "La Linotypie." By L. Tranchant. Published by Gauthier-Villars et Fils, 55 Quai des Grands-Augustins, Paris.

The Fiftieth Celebrity interviewed by *Tü-Bits* is R. Child Bayley, assistant secretary of the Royal Photographic Society.

In the Article by Fred. W. Cooper, in our last issue, p. 269, the finders should be described as bi-concave instead of bi-convex.

Photo-Autocopyist Prints, on fancy cards, remind us of the value of the simple photo-autocopyist apparatus as a means of producing Christmas cards in numbers.

The Photography of Explosions is interestingly treated and very fully illustrated in a paper by Alfred Siersch, just issued by the Federated Institution of Mining Engineers. We take it that the publication is not on sale.

Dr. Schufeldt continues his extremely interesting "Natural History Papers," illustrated by photography, in the current issues of *Shooting and Fishing*. Dr. Schufeldt is one of the officials of the United States National Museum.

Zimmermann Bros., St. Paul, Minn., U.S.A., send a very handsome souvenir of the 30th National Encampment of the Grand Army of the Republic. The work is lavishly illustrated with half-tones from photographic and other originals.

"**The Camera and the Comedy**" is the title of an interesting article in *Scribner's* for November. It is written by Alexander Black, and illustrated with several examples from his picture plays illustrating some of his various methods of picture making.

The Name of Harold Baker as author of a book, is a guarantee of accuracy and of care in compilation. His handbook for beginners (2) is sure of a ready sale, and is sure to satisfy those who become its purchasers. The directions are full and easily understandable.

Gut Licht, the handy little annual, published from the office of Apollo, reaches us in its second issue. It contains the usual matter to which we are accustomed in photographic annuals, together with a considerable number of unusually well-printed half-tone illustrations from originals by workers in many lands.

The Kodak News seems more interesting every month, and the October issue is especially noteworthy for both articles and illustrations. Incidentally it is worth noting that this is one of the things which are done better in England than in America, for the American *Kodak News* is not nearly so good as the British.

Excellent Radiograms of many attractive subjects have been sent by A. E. Livermore, the writer of a section in our "Practical Radiography." A good deal of this work has recently been selling in the interests of a Bazaar Fund,

which only illustrates another of the almost innumerable applications of photography.

From J. B. B. Wellington we have received a number of delightful souvenirs of the recent Leeds Convention, interesting from the fact that they are printed from negatives on the new Wellington paper film. The views in York and at Bolton Abbey, and a large group of the conventioners who attended the Bolton excursion well show the qualities of the Wellington film and Wellington papers.

Photographische Almanach for 1897 (3) opens, very suitably, with a platinotype portrait of the late Dr. Liesegang, from whose publishing office it is issued. The annual contains articles on several branches of photography at present engaging attention, and, in addition to the frontispiece, has a couple of other supplements illustrating some of W. Cronenberg's work on half-tones, with and without the ruled screen.

La Photographie des Couleurs (7). If one may judge by the extent to which the subject is now attracting attention a handbook on the photography of colors, such as the one just issued by Leon Vidal, is sure of a very hearty welcome. The orthochromatic rendering of colored subjects, as well as the reproduction of colors by the trichromatic process, is treated, and both branches of the subject are illustrated by colored examples.

Photogravure and Platinotype are more largely used than ever in the charming Christmas cards of C. W. Faulkner & Co. Not only are photographic originals reproduced but both photogravure and platinotype are used for reproducing painters' originals. To our professional readers the sale of such cards offers a profitable extra branch of business, while the amateurs may well use them in preference to chromo-lithographic cards for sending to their friends.

Views of Westminster Abbey, the fourth of Freeman Dovaston's books on "London's Beauties," has just been issued at one shilling nett. In paper and printing it is even superior to its predecessors, and the pictures have all the photographic excellence to which we are accustomed in Mr. Dovaston's work. The accompanying letterpress descriptions are by Thomas Wright. As showing that the public appreciate this class of work we are interested in knowing that the book of "St. Bartholomew the Great" is passing into a second edition.

Pennel-ties.—Everyone knows how the art critic of *The Daily Chronicle* furiously rages against photography. An example from the issue of October 28th is particularly interesting, and it reads as follows:—"It is pleasant indeed to take up a large important work like 'Manchester: Old and New,' and find it really illustrated and not plastered with photographs. We are absolutely sure that the day is coming when publishers will discover that it will pay them better in the long run to give the public interesting designs, rather than machine-made attempts at rendering nature."

Ecclesiastical Buildings, a souvenir of Shrewsbury, contains twenty-one excellent collotypes of the exteriors and interiors of the Shrewsbury Churches. They are all printed on a good rough paper, and are excellent examples of collotype work, from original negatives by W. W. Naunton. To the members of last year's Photographic Convention they will be especially interesting. The book is so good that we have only one fault to find with it, namely, that the pictures are somewhat too large for the pages, but as they are good enough to be taken out and framed separately a cut-out mount will easily remedy this defect.

La Linotypie (10) is a small pamphlet published by Gauthier-Villars et Fils, of Paris, and written by L. Tranchant. It is one of the many practical books sent out by this firm, and is devoted to what might be called decorative photography. It gives careful and concise directions for preparing various textile fabrics to receive a photographic image. Different methods are described, suggestions made as to materials suitable for use and the articles to be selected, and there are a number of formulæ also. The book should be very useful to all those using photography for decorative purposes.

First Aid in Photography (6) is the title of a commendably brief handbook for the beginner. The instructions are dogmatic and terse, and are even in some cases sarcastic. For instance, the writers say:—"A friend of ours, a beginner, was confused and took six views on one plate. He was not pleased. Had he used the catch he would have had six views on six plates. This is better than all on one." Following the example of our own publishers, in a recently issued handbook, "First Aid" is supplemented by a Woodburytype negative on celluloid. The book is bound in a neat red cloth cover, and is sure to have a very large sale.

The Greeting Card reproduced on this page is one of a charming series of souvenirs issued by that good friend of all photographers, A. H. Wall, of Stratford-on-Avon. Mr. Wall has recently opened an emporium for the sale of books, paintings and other objects of Shakespearean interest, and amongst his stock is this line of Christmas, New Year, and Birthday cards, based on photographs, touched up and surrounded by brush-work and reproduced on platino-bromide paper. The prices are reasonable, and probably many photographers will be glad to use such cards this Christmas.

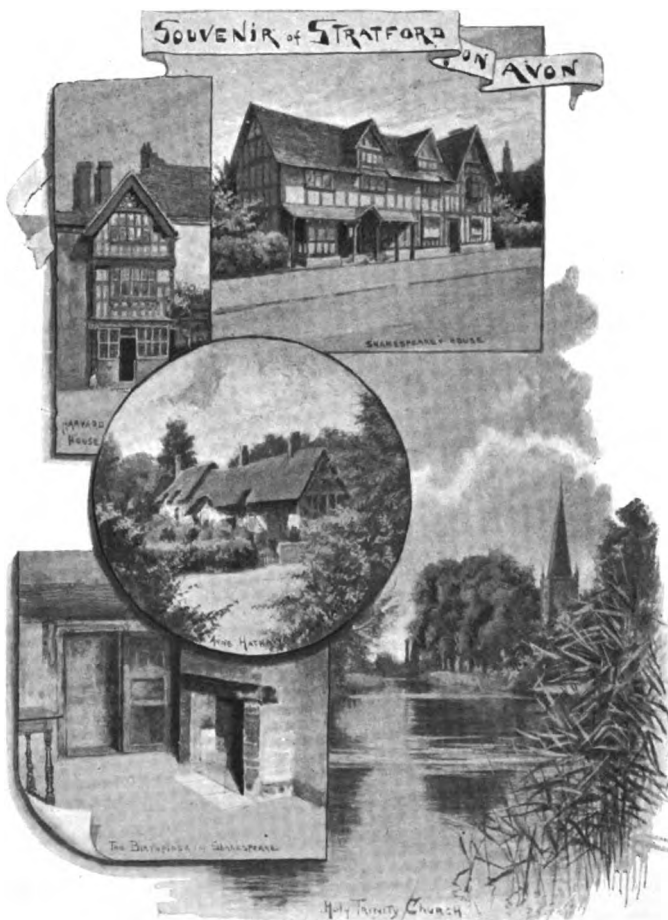
Induction Coils and their manufacture are very fully treated in a book by F. C. Allsop (5), whose business as a manufacturing electrician keeps him closely in touch with every phase of up-to-date electrical work. Of course, the particular application of induction coils in which photographers are interested, takes but a small place in the book, but the instructions for designing and making the coils themselves are very ample, and very well illustrated. A short chapter on the effects of electric discharges upon the dry plate suggests further investigation, and throws out the idea that here may be found further evidence as to the electric nature of light. The book is necessary to radiographers who would thoroughly understand their work.

Photographic Magazines.—In *Photography* for November 5th, "G.D." writes rather bitterly about the bad quality of the photographic work in general journals, and regrets that there is no such thing as a well-illustrated and artistic photographic magazine in the world. He says "The only magazine that appears to be able to make a beginning in this direction, is the *Wiener Photographische Blätter*." He attributes this success "to the fact that it has the enthusiastic support of the band of skilful Viennese photographers, whose pictures are now regularly looked for with interest in our best exhibitions." It is not necessary for us to go into any detail as to the possibility or otherwise of running an artistic photographic magazine as a financial success, but the practical experience of those who have tried, honestly and faithfully, to achieve this result has been far from satisfactory. If we go back to the days of *The Illustrated Photographer*, the inner history of which we know very well, we find a journal edited by a thorough artist and competent art critic (A. H. Wall), who devoted himself night and day to the work, who cordially invited co-operation, who was liberally supported with capital, and who, at the end of about two years, was obliged to retire from a losing venture, because he received no adequate support from photographers. Dr. Edward L. Wilson, a man who has devoted his life, and a fortune in money, to the interest of photographers, and who still, at the end of some thirty years' journalism, sticks resolutely to his work, has had to complain again and again of the apathy and lack of support received from the craft. "G.D." is perfectly right in attributing the success of the *Photographische Blätter* to the enthusiastic support of Viennese photographers, and we think it must be recognised that nothing short of this kind of enthusiasm will make possible a similar artistic success in England or the States. Fortunately the majority of photographers are prepared to give such support, but there are others, even including some of those who complain of the badness of the British representation of photography, who are not merely content to withhold their support, but even oppose as far as lies in their power such efforts as our PHOTOGRAMS OF THE YEAR.

Everybody's Medical Guide (London: Saxon & Co., Cloth, 6d.) is a very handy companion for pocket or home.

Though its subject is not photographic it is one in which, unfortunately, photographers are as much interested as the rest of the world.

The Photogram Wall Calendar, which has been aptly termed "the Photographers' Daily," will be on sale very early in December. It consists of sixteen sheets and cover, twelve of which contain in their upper half very plain calendars for the months. These consist of white letters printed on a dark blue ground, and are easily visible in the dark-room, or at a considerable distance; and this calendar portion alone, we believe, is better value than any wall calendar issued at the price. In addition to this, there are a thousand and one useful items to which the photographer,



or the photo-material dealer may at any moment require to refer. The usual postal and similar information is printed in large type, together with tables of weights and measures, tables for the conversion of the metric to the British system, selected formulæ for almost every purpose, a schedule of poisons and their immediate and effective antidotes, etc., etc. We hope that the calendar will find a place in every photographers' home.

Our Contemporary, *The St. Louis and Canadian Photographer*, commences a paragraph in the following words:—"Mr. H. P. Robinson, the powerful writer on photographic art, and whose works have been translated into all the languages of nations using the camera, said recently, on being elected to the presidency of the Photographic Society of Great Britain," etc. Mr. Robinson will no doubt be pleased and proud to hear that he has been elected president of the Photographic Society of Great Britain!

Correspondence.

"Christ au Tombeau."

To the Editors: THE PHOTOGRAM.

DEAR SIR AND MADAM,—Permit me to congratulate you on the general excellence of "PHOTOGRAMS OF '96," and to make a few observations on the picture entitled "Christ au Tombeau," by L. Bovier, of Brussels. It is not original, but simply a translation of a painting exhibited a few years ago and reproduced in Pictures of either '91 or '92. I do not quite remember the date, but I made a sketch from the reproduction at the time, and it has been hanging in my home ever since.

On looking at the reproduction of Bovier's "Christ au Tombeau" in "PHOTOGRAMS OF '96," it is difficult to believe it is not a copy of the original painting, the only difference appears in the head of the woman, at the feet, being a little more inclined than in the original picture.

And as it follows that the page of praise to Bovier really does not belong to him but to the artist who painted the original picture. The writer is correct in stating it to be a great work and one that will live, and that none but a master could have planned this, that, and the other; but the master is not L. Bovier!

Trusting you will give publicity to what others may, by this time, have discovered—I remain, yours truly,

CHAS. F. EMENY.

To the Editors: THE PHOTOGRAM.

DEAR SIR AND MADAM,—I must first thank you for the promptitude and courtesy you have shown in sending me a copy of the communication received by you from Mr. Emeny on the subject of my "Christ au Tombeau." I will not dispute that there may exist a similar painting in London or elsewhere, and that drawings and engravings may have been made from it. But what I positively deny is that I have made a common-place photographic reproduction of it. The picture, since picture it is, is truly my own conception and I defy anyone to prove the contrary. I have never had the pleasure of visiting London, nor the pleasure of seeing the painting of which Mr. Emeny speaks and I declare it with the same energy that a father would show in defence of his child. I was led to conceive the picture about two years ago after a visit paid to one of the many churches in Bruges. I cherished then for a long time the idea of, some day, at a time more or less distant, producing a work bearing the title "Christ au Tombeau." The idea germinated a long time, then began to grow, and to take shape; it developed slowly, gradually, during a serious and thorough study of the old and modern masters who have conceived other "Christs at the Tomb." Such as Henner, a French painter, Holbein, a German painter, etc., etc. I stopped, although undecided, and not yet completely satisfied with the composition of the print you have seen and judged.

Once the idea was in shape, the great difficulty was to find proper models answering as nearly as possible to the ideal I had formed. To give you an idea of the difficulty there was in finding just what was wanted, I made attempts with a number of worthy models who were rejected until finally a happy day when chance threw in my path those you know. Still they are not like the ones I had created which proves once more that perfection does not exist in this world. This settled, I face Mr. Emeny with good courage when he writes that the page of praise does not in reality belong to me, but rather to the English painter, who had the idea before me. So be it. I have then the great blame of coming in second and of having produced only a photographic work in monochrome which cannot and should not be compared to a pictorial work. If this is the general judgment, I submit, while claiming nevertheless the paternity of my work which is truly mine—mine only. As far as I can judge from what has been written I think the two sister pictures are worthy of each other. The artist painter, with the simple photographer, who has practically conceived the same picture can walk honestly hand-in-hand, without ill-feeling and without the least idea of jealousy, each strong in his own work, works which will live in spite of what can be said, and pay no attention to any inevitable criticism.—Cordially yours,

L. BOVIER.

A Plea for Help, and a Complaint.

To the Editors: THE PHOTOGRAM.

DEAR SIR AND MADAM,—As my heading defines my want and my grievance, and to prevent any mis-interpretation of my real motive, I at once announce myself as a Rejected of

1896 R.P.S. Consequently "Ego" will grumble, but in spite of this "Ego" will try to grumble for the benefit of companions in misfortune.

In the year 1895, I, a young worker, thought to gauge my standard of work, and the test I judged would accomplish this, was to submit work to the R.P.S. for their show, I was fortunate and had one of five accepted and hung.

The result of this was an invitation emanating from the Council of the Society to become a member. I became one, not because it was a Royal, but because I fondly imagined I should derive some help and instruction in one form or another, for the golden bird, viz:—a guinea.

I further argued, that provided I each year submitted work as good as that which twenty-five judges of 1895 said merited a place, I should again obtain a like honor. The Council solicited my membership. Why? Was it because of merit or were the funds low?

Now between 1895 and 1896 in spare moments from the strain and worry of professional photography (turning out portraits to sell, and which do sell, at 25/- the dozen cabinets "some London photographers would like this figure") I make pictures which have entailed care and thoughtful work, and which realize, when finished, the effect I aimed and worked for. This trouble, this striving goes for nothing; all are rejected.

Here is food for contemplation ere sending your future guinea away. In place of encouragement, rejection, no reason given, no hint as to errors, nothing out of which one can suck knowledge for future guidance. Twelve months' work annihilated by about as many judges in as many seconds. I write to try and learn something of the reason but am met by reply, that if I wish to profit by the Society my only method would be to visit the show and see and learn what pleases the judges. How very kind! Too generous Society! I am permitted to pay my own expenses to town and back, to see what? Perhaps fifty pictures worth the visit, but the remainder not so superior to others rejected, and why should I expend all this money in railway fares, when by spending 18. 6d. I shall have PHOTOGRAMS OF '96, which will teach me more, because of the criticisms and reproductions; further it is always by me, therefore for 18. 6d. I obtain more than I do for 21s.

The regulation regarding faked pictures—this certainly ought to be expunged in the face of work shown this year. The Society according to their charter is for the express purpose of promoting photography in all its branches. How is this end being arrived at? I fail to see it at present. Perhaps the gentleman who suggested my trip to London would enlighten me.

Now, sir, on the above complaint I would ask is it not time we had an Exhibition of rejected work. It would encourage, a great many it would instruct, and it would not be a show, the merit of which would rest on a "Royal" prefix. I am fully convinced that the rejected of 1896 would compare most favorably with the "Royal" Show; for why? I notice 116 Exhibitors of 1895 missing in 1896. Twenty of this number are "fellows," eleven are "members," eighty five are "non-members," but contained therein are admittedly some of the finest exponents of the art of photography.

Surely they have not all refrained from submitting work; either they have—or, worse than all—we must conclude all are rejected.

If this letter serves the purpose I intend it should, I am satisfied and thank you, Mr. Editor, for publishing it.—Yours,
Rhyl, North Wales. R. M. EVANS.

[Received just too late for our November issue.—EDS.]

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